



REMOVAL ACTION PLAN
DAYTON TIRE AND RUBBER COMPANY
DAYTON, OHIO

Prepared For:

U.S. Environmental Protection Agency
Region V
230 South Dearborn Street
Chicago, Illinois 60606

CONTRACT NO. 68-01-7367

TAT-05-N-00038

TDD# 5-8704-13

Prepared by:

WESTON-SPER
Technical Assistance Team
Region V

January 1988

TABLE OF CONTENTS

	<u>PAGE</u>
LIST OF FIGURES.....	iii
LIST OF TABLES.....	iv
LIST OF ATTACHMENTS.....	v
1.0 SITE LOCATION.....	1
2.0 SITE HISTORY.....	1
3.0 SITE ASSESSMENT.....	5
4.0 REMOVAL - STABILIZATION ACTION BY THE U.S. EPA.....	13
5.0 ANALYTICAL RESULTS.....	14
6.0 THREATS TO HUMAN HEALTH AND THE ENVIRONMENT.....	22
7.0 PROJECT PLANNING STUDIES.....	30
8.0 REMOVAL GUIDELINES AND COST REQUIREMENTS.....	35
9.0 COST SUMMARY.....	44

LIST OF FIGURES

	<u>PAGE</u>
FIGURE 1 - LOCATION MAP.....	2
FIGURE 2 - SITE LOCATION MAP.....	3
FIGURE 3 - SITE GROUNDS MAP.....	6
FIGURE 4 - ROOF PLAN.....	7
FIGURE 5 - BASEMENT FLOOR PLAN.....	9
FIGURE 6 - FIRST FLOOR PLAN.....	10

LIST OF TABLES

	<u>PAGE</u>
TABLE 1 - TRANSFORMER INVENTORY.....	11
TABLE 2 - ANALYTICAL RESULTS OF WOLF CREEK AND MIAMI RIVER SAMPLING - WATER, SEDIMENTS, AND BANK SOIL.....	15
TABLE 3 - ANALYTICAL RESULTS OF FISH TISSUE SAMPLING.....	18
TABLE 4 - ANALYTICAL RESULTS OF ON-SITE SOIL SAMPLING.....	19
TABLE 5 - ANALYTICAL RESULTS OF TRANSFORMER AND CAPACITOR OIL SAMPLING.....	20
TABLE 6 - ANALYTICAL RESULTS OF TRANSFORMER AND CAPACITOR ROOM SURFACES SAMPLING.....	21
TABLE 7 - ANALYTICAL RESULTS OF DIOXIN AND FURAN SAMPLING.....	23
TABLE 8 - ANALYTICAL RESULTS OF DRAINAGE SYSTEM SAMPLING.....	24
TABLE 9 - ANALYTICAL RESULTS OF GENERAL BUILDING SAMPLING.....	25
TABLE 10 - ANALYTICAL RESULTS OF BULK ASBESTOS SAMPLING.....	26
TABLE 11 - ESTIMATED DEBRIS QUANTITY.....	38

ATTACHMENTS

ATTACHMENT A - COST ESTIMATE CALCULATIONS

ATTACHMENT B - SITE PHOTOGRAPHS

1.0 SITE LOCATION

The Dayton Tire and Rubber Company (Dayton Tire) facility is located at 2347 Riverview, Montgomery County, Ohio (Figures 1 and 2). The 37 acre site is adjacent to Wolf Creek, 1.25 miles upstream of its confluence with the Great Miami River, within the City of Dayton. The site is bounded on the north by Riverview Avenue, on the east by Rosedale Avenue, and on the south by Wolf Creek. The western edge of the site is near the intersection of Riverview Avenue and Bridge Street. Residences are within 500 feet of the facility, which is in a mixed residential, commercial, and industrial area. The nearest business, Firestone Tire Distribution Center, is located immediately opposite the facility on Rosedale Avenue. A supermarket is located across Wolf Creek south of the facility.

The topography of the site is relatively flat, with the exception of an abandoned railroad spur on site and steep banks along Wolf Creek. According to the City of Dayton, the south end of the Dayton Tire property is located over the former Wolf Creek streambed, which was landfilled prior to initial construction of the facility. Both Wolf Creek and the Dayton Tire property lie over the Great Miami aquifer. Local drinking water supplies, however, are not drawn from private well systems. The city of Dayton municipal well field is located approximately seven miles southwest of the site.

2.0 SITE HISTORY

Dayton Tire operated the facility from the early 1940's to 1980 when the owners of the plant ceased operations and sold the property to Firestone Tire and Rubber Company. Since the shut-down of the plant, the facility has been the target of extensive vandalism and arson. The Dayton Fire Department has responded to several reported fires at the facility, since it was abandoned in 1980.

Firestone acquired the Dayton Tire property as part of the purchase of property across Rosedale Avenue where Firestone eventually built a distribution facility. Firestone sold the property and facility to J.V. Properties, a real estate brokerage firm, in July 1981. A partner of J.V. Properties, Machinery Merchants, Inc., is allegedly interested in selling the tire making equipment remaining within the facility. Recently, these parties, in addition to a local salvage company, have been named by the U.S. Environmental Protection Agency (U.S. EPA) as responsible parties for a polychlorinated biphenyl (PCB) release from Dayton Tire and are in current litigation.

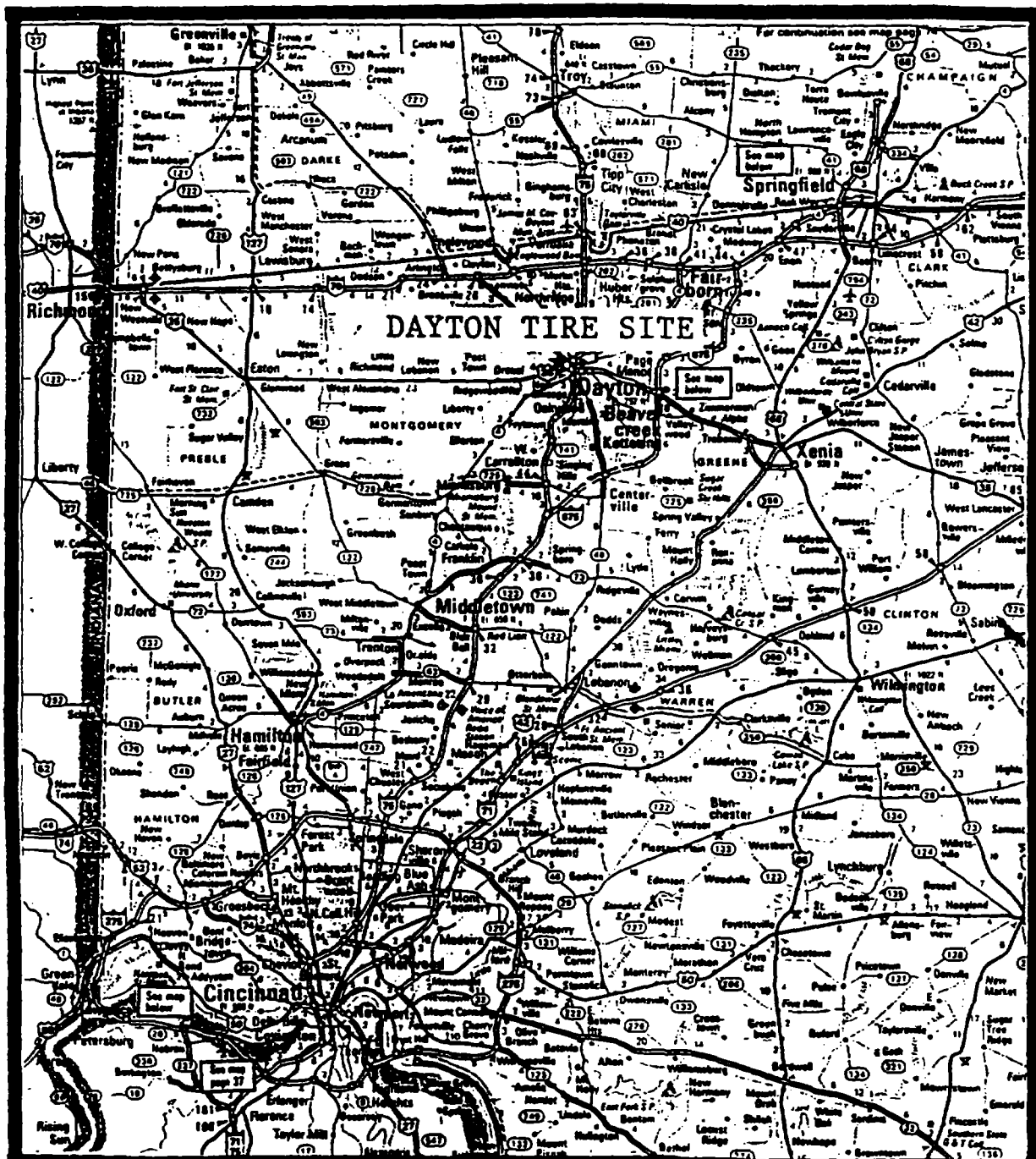


FIGURE 1
LOCATION MAP
DAYTON TIRE AND RUBBER COMPANY
DAYTON, OHIO

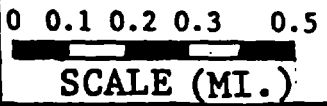
NO SCALE



WESTON
ENGINEERING & ARCHITECTS



FIGURE 2
 SITE LOCATION MAP
 DAYTON TIRE AND RUBBER COMPANY
 DAYTON, OHIO



WESTON

In addition to manufacturing tires, Dayton Tire also manufactured other rubber products. The production of rubber products involved the use of solvents, alcohols, formaldehyde, waste oils, and acids. According to a former Dayton Tire employee, specific solvents used at the plant during its 40 years of operation included toluene, xylene, and benzene. In addition, banbury sludge, was reported to have been left on-site in three underground railroad tanks. Muriatic acid was at one time stored underground, adjacent to Wolf Creek, but the storage tank was removed at the time of the plant shut down.

Previous Responses at Dayton Tire

On the afternoon of April 3, 1987, a City of Dayton employee reported an oil sheen on Wolf Creek, flowing into the Great Miami River. An Ohio Environmental Protection Agency (OEPA) representative investigated the reported spill, tracing the oil sheen and observing oil discharging from a storm drain outfall pipe located on the south end of the Dayton Tire property. Leston Sewer Company, Dayton, Ohio, was contracted by the OEPA to place booms across Wolf Creek upstream of its confluence with the Great Miami River, and mobilize a vacuum truck in an attempt to intercept oil at the storm drain outfall, prior to reaching the creek. A sample of the oil from the pipe was collected by the OEPA, analyzed, and found to contain 22,900 parts per million (ppm) of PCB. The OEPA requested assistance from the U.S. EPA in containing the spill.

On the evening of April 3, 1987, the U.S. EPA On-Scene Coordinator (OSC), Robert Bowlus, and the Technical Assistance Team (TAT) arrived on site and met with James Crawford, OSC for the OEPA. Because of the immediate threat posed to human health and the environment, and the anticipated costs associated with mitigating these threats, the U.S. EPA accepted the lead agency role in the removal actions.

OSC Bowlus subsequently activated the Emergency Response Cleanup Service (ERCS) and mobilized additional equipment and manpower. Additional booms were placed on the creek and 24-hour vacuuming/monitoring of the outfall pipe was performed by the contractor. From April 3, 1987 through April 7, 1987, approximately 70 55-gallon drums of oil/water were recovered from the creek outfall area. Additionally, over 200 gallons of free-standing oil from around a suspected transformer spill source were pumped into 55-gallon drums in an effort to contain the amount of oil reaching Wolf Creek.

Concurrent with site stabilization activities, sediments and water within Wolf Creek, both upstream and downstream of Dayton Tire, and soils located adjacent to the suspected transformer spill sources were sampled. The sampling was performed by the

ERCS subcontractor, OH Materials (OHM) of Findlay, Ohio, with TAT and OEPA oversight. Thirty samples were collected both on and off-site on April 5, 1987; results are presented in analytical results section.

3.0 SITE ASSESSMENT

The TAT was tasked on April 10, 1987, by the U.S. EPA to conduct a site assessment (SA) of Dayton Tire. On April 14, 1987, TAT members Kathy Nobles and William Scoville met with OSC Bowlus and Mr. Crawford (OEPA) to discuss the approach for the site investigation. On April 15, 1987, a second PCB oil release was noted at the outfall pipe at Wolf Creek. The ERCS contractor, PEI Associates, Cincinnati, Ohio, was again instructed by OSC Bowlus to begin 24-hour vacuuming/monitoring of the outfall pipe, place additional booms on Wolf Creek downstream of Dayton Tire, and assist in tracing the source of the spill. As a result of this spill, the U.S. EPA initiated Phase I of a removal action at Dayton Tire concurrent with the site assessment by the TAT (Figure 3). For purposes of clarity, the findings of the TAT site assessment are presented prior to a discussion of the removal program initiated by the U.S. EPA.

3.1 Site Inspection

The Dayton Tire facility, a 1,000 foot by 500 foot complex, has two primary levels with mezzanine areas located throughout the plant. Although the property is surrounded by a 6-foot high security fence, extensive vandalism had taken place as was apparent from the numerous broken windows. Access could be gained to the property through gaps in the fence and an open pedestrian entrance on the north end of the property. Vehicle and pedestrian gates were present on the north, west, and east sides of the site; the south side bordered Wolf Creek. Inoperable rail lines, which were used in the transport of chemical materials, ran along the north and south sides of the building.

Transformers

Three roof-top transformer stations, containing 11 transformers, remained on the multi-level facility. Transformer station C (Figure 4), located on the western end of the roof area, had been salvaged. Three of the five transformers were found lying on their sides with the copper metal from their interior removed, and scrap metal bands discarded nearby. The oil from these transformers had been released as indicated by the dark stains surrounding the transformer carcasses. The remaining roof transformer stations, A and B, appeared to have been left intact, although some of the transformers were empty and the surrounding concrete dikes contained oily substances.

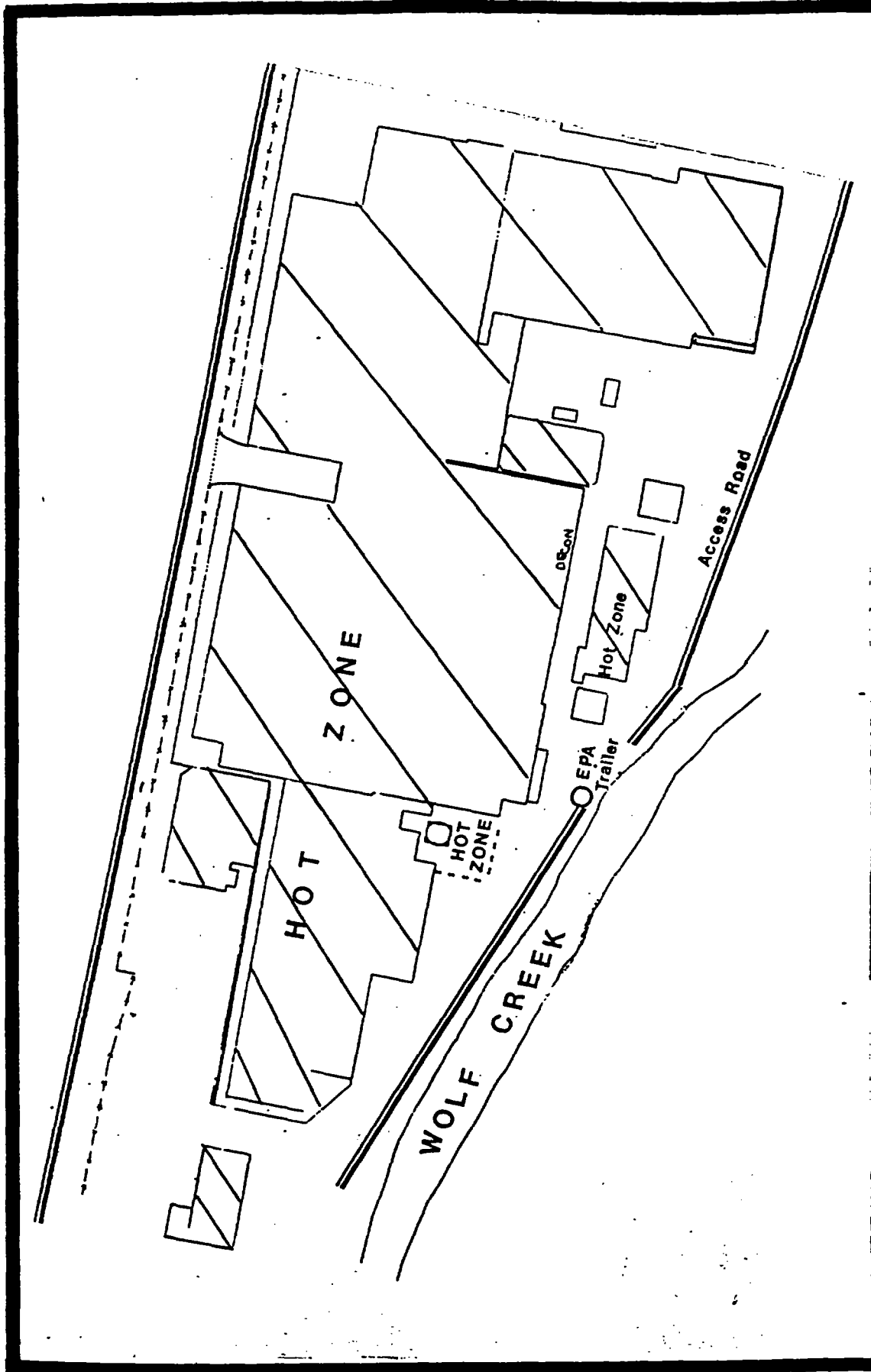


FIGURE 3
 SITE GROUNDS MAP
 DAYTON TIRE AND RUBBER COMPANY
 DAYTON, OHIO



NO SCALE

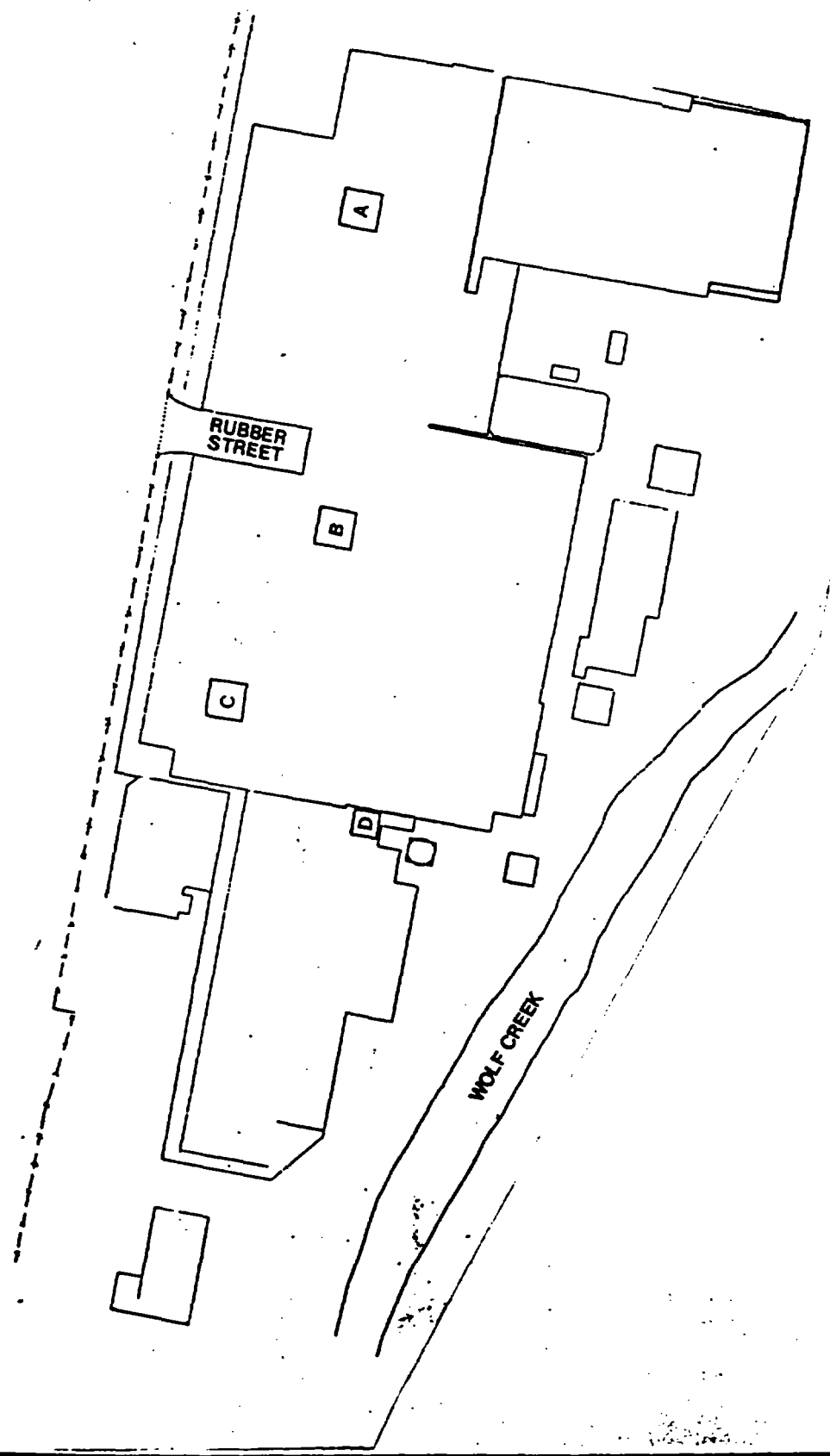


FIGURE 4
ROOF PLAN
DAYTON TIRE AND RUBBER COMPANY
DAYTON, OHIO



NO SCALE

WESTON

Two more exterior transformer stations, areas D and E, were inspected during the investigation. Initially, it was believed that these stations were the source of the spill into Wolf Creek, based on their proximity to the outfall pipe, evidence of vandalism, and the observance of oil on the soil surface surrounding the transformers. The two transformers in area D were located on an intermediate roof and the two transformers in area E were positioned on a concrete pad at ground level. At each of the two locations, the smaller (approximately 500 gallons) of the two transformers has been completely drained while the larger transformer (approximately 1,500 gallons) was only partially emptied. The soil in the area surrounding the transformers in area E was noticeably stained compared to the soil in adjacent areas. Stressed vegetation was also observed in the proximity of area E.

In addition to the transformers/carcasses located outside, 26 transformers were observed on-site, ranging in size from 25-gallon to 1500-gallon capacity. Transformer vault room V-5 was located on the mezzanine level and transformer vault rooms V-1, V-2, V-3, and V-4 were located in the basement (Figure 5 and 6). All of the rooms had been vandalized and/or salvaged to varying degrees.

All the transformers found at the Dayton Tire site are described in Table 1.

Capacitors

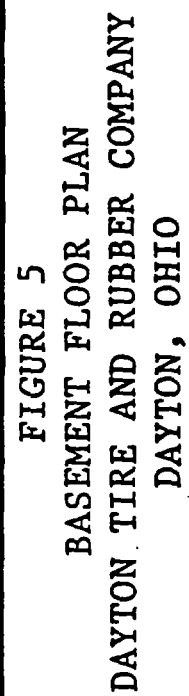
Two switch rooms that contained approximately fifty 5-gallon to 20-gallon capacity capacitors were located on the first floor, and seven capacitors were found in an interior room on the second floor of the facility.

Asbestos

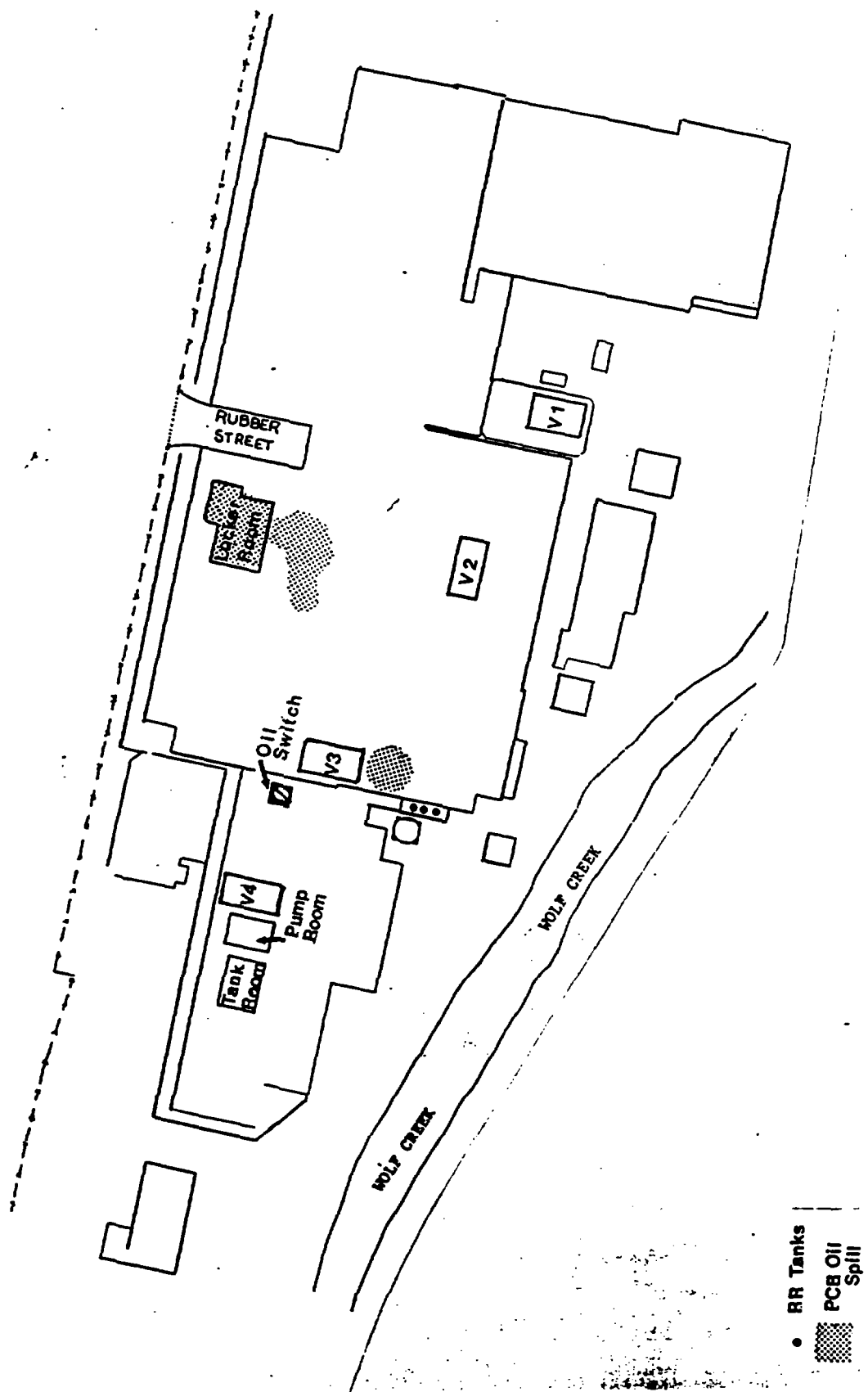
An extensive amount of friable asbestos was observed by the TAT during the inventory of the facility. In localized areas, a layer of friable asbestos 1-2 inches deep covered the floor. The asbestos apparently had fallen from overhead steamline pipes. A network of similar insulated lines covers the entire facility, including the basement. In addition to asbestos covered pipes and tanks, sections of the roof and other construction materials used on-site are composed of asbestos.

Other Materials

Based on initial field investigations by the TAT, the following unknown quantities of liquids and sludges remain at the facility: three buried railroad tank cars of unknown, potentially waste oil, material located in building #36A; eight 12,000-gallon stor-



NO SCALE



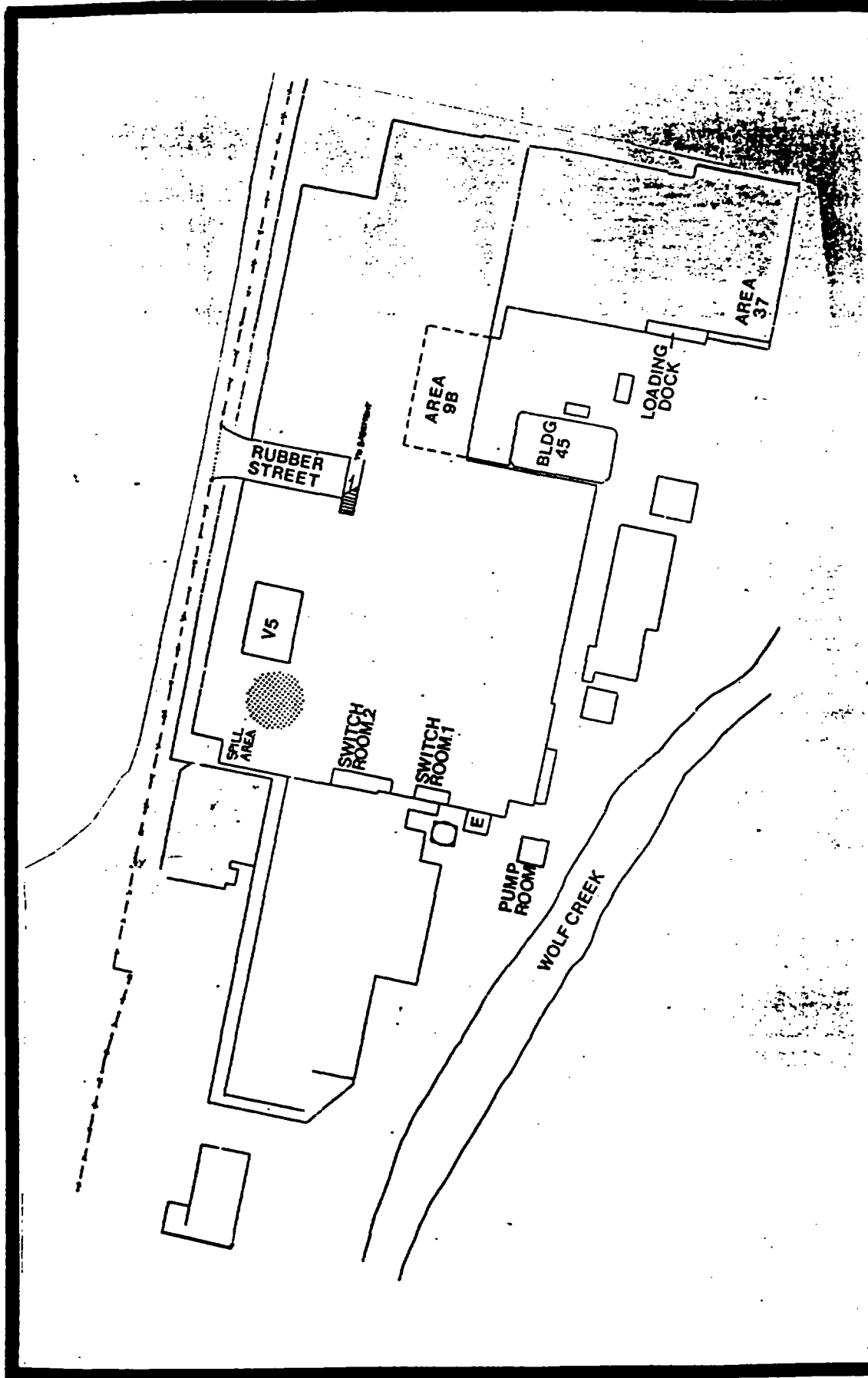


FIGURE 6
FIRST FLOOR PLAN
DAYTON TIRE AND RUBBER COMPANY
DAYTON, OHIO

NO SCALE

TABLE 1
TRANSFORMER INVENTORY
DAYTON TIRE AND RUBBER COMPANY
DAYTON, OHIO

AREA	TRANS NUMBER	BLDG NUMBER	SERIAL NUMBER	CAPACITY GALLONS	CARCASS WEIGHT (ESTIMATED)	COMMENTS
A-ROOF	A1	34	NA	385	NA	EMPTIED BY U.S. EPA
	A2	34	NA	385	NA	EMPTIED BY U.S. EPA
	A3	34	NA	385	NA	EMPTIED BY U.S. EPA
	A4	34	NA	385	NA	EMPTIED BY U.S. EPA
B-ROOF	B1	44	20854-4A01	240	NA	EMPTIED BY U.S. EPA
	B2	44	2011B-A01	240	NA	EMPTIED BY U.S. EPA
C-ROOF	C1	3A	7530203	260	1350 lb	UPRIGHT BUT EMPTY
	C2	3A	7522822	260	1350 lb	EMPTIED BY U.S. EPA
	C3	3A	7528437	260	1350 lb	EMPTIED BY U.S. EPA
	C4	3A	7522821	260	1350 lb	ON SIDE & EMPTY
	C5	3A	7525545	260	1350 lb	ON SIDE & EMPTY
D-ROOF	D1	36E	18895	500	NA	UPRIGHT BUT EMPTY
	D2	36E	PCR 40491	1450	NA	EMPTIED BY U.S. EPA
E-GRND	E1	NA	NA	500	NA	EMPTIED BY U.S. EPA
	E2	NA	NA	1450	NA	EMPTIED BY U.S. EPA
VAULT 1	V1-1	45	NA	260	1350 lb	SALVAGED, EMPTY
	V1-2	45	NA	260	1350 lb	SALVAGED, EMPTY
	V1-3	45	NA	260	1350 lb	SALVAGED, EMPTY
VAULT 2	V2-1	4C	NA	260	1350 lb	SALVAGED, EMPTY
	V2-2	4C	NA	260	1350 lb	SALVAGED, EMPTY
	V2-3	4C	NA	260	1350 lb	SALVAGED, EMPTY
	V2-4	4C	NA	260	1350 lb	SALVAGED, EMPTY
VAULT 3	V3-1	36E	NA	260	1350 lb	SALVAGED, EMPTY
	V3-2	36E	NA	260	1350 lb	SALVAGED, EMPTY
	V3-3	36E	NA	260	1350 lb	SALVAGED, EMPTY
	V3-4	36E	NA	260	1350 lb	SALVAGED, EMPTY
VAULT 4	V4-1	50	B532524	285	2400 lb	EMPTIED BY U.S. EPA
	V4-2	50	B522525	285	2400 lb	EMPTIED BY U.S. EPA
	V4-3	50	B532526	285	2400 lb	EMPTIED BY U.S. EPA
	V4-4	50	1467003	765	3970 lb	EMPTIED BY U.S. EPA
	V4-5	50	NA	765	3970 lb	EMPTIED BY U.S. EPA
	V4-6	50	1457004	765	3970 lb	EMPTIED BY U.S. EPA
	V4-7	50	NA	260	1350 lb	ON SIDE AND EMPTY
	V4-8	50	NA	260	1350 lb	ON SIDE AND EMPTY
	V4-9	50	7522823	260	1350 lb	ON SIDE AND EMPTY
VAULT 5	V5-1	2A	-	-	-	NOT PRESENT
	V5-2	2A	-	-	-	NOT PRESENT

age tanks of unknown material located in the basement adjacent to vault room #4; large mixing vats of unknown material located throughout the basement; and approximately 100 55-gallon drums of unknown materials. Many of the drums located outside the facility were empty. Pump lines from the 12,000-gallon tanks were traced and found to lead into a pump room adjacent to the tank room. Open mixing pits were observed on the western end of the basement where the greatest amount of chemical storage and handling most likely occurred. Although sampling of some of these pits for the presence of PCBs was conducted during subsequent investigation by the TAT, the contents of all the pits are still unknown.

In addition to the liquids and sludges, a large amount of scrap metal was strewn throughout the interior and exterior of the facility. Piles of metal coiling from the salvaged transformers were observed on all floors of the facility.

Fire Damage

Ash and soot observed on the ceiling, walls, and floor within the transformer vaults, as well as other areas throughout the building, indicate that some of the PCB oil may have been burned either as a direct or indirect result of the copper salvaging operations.

3.2 Air Monitoring

Air monitoring was conducted during the site investigation with a photoionization detector (HNU), a radiation meter, and a Combustible Gas Indicator (CGI). No elevated readings above background were recorded on any of the instruments.

3.3 Sampling Effort

Sampling by the TAT was conducted during both the emergency response and the site assessment. Immediately following the release of suspected PCB oil into Wolf Creek, the TAT oversaw the collection of 16 soil samples and 9 water samples from Wolf Creek and the Great Miami River. An additional 5 soil samples were collected on-site from the area surrounding the exterior transformer stations, where it was suspected that the PCB release originated.

The TAT conducted a more extensive sampling program (94 samples) both on and off-site in an attempt to locate the source of the spill and to characterize the site. Oil from each transformer was sampled concurrent with its removal by the ERCS contractor. Additional oil samples were collected from the concrete dikes surrounding the transformer stations and from standing pools of suspected oil located throughout the interior of the facility.

The soil sampling program was composed of 8 composite samples from the perimeter of the property and 1 off-site composite sample.

To assist the U.S. EPA in identifying the source(s) of PCB oil, eight water/oil samples were collected from manholes, two from sump holes, two from pump rooms, and one from an oil/water separation lagoon; all located along the drain system of the facility. It was suspected that a large amount of the oil released from the transformers entered the drain system and ultimately Wolf Creek.

Sampling for the presence of dioxins and furans was performed by the TAT and resulted in the collection of seven composite samples. Samples were collected from transformer vaults #1-4 and switch rooms #1 and #2, where burning of PCBs was suspected. A composite sample, made up of four aliquots, was also collected from ash piles located throughout the first floor and basement of the facility.

Off-site sampling along Wolf Creek and the Great Miami River was undertaken by the TAT and the Southwest District OEPA. A total of 21 sediment and soil samples were collected on the Great Miami River between Wolf Creek and a point approximately three miles downstream of Dayton Tire. Background samples were collected from Wolf Creek and the Great Miami River from locations upstream of Dayton Tire and upstream of the confluence of Wolf Creek and the Great Miami River.

Independent of the U.S. EPA sampling effort performed by the TAT, the OEPA conducted fish sampling along the Great Miami River and Wolf Creek on April 9, 1987.

4.0 REMOVAL - STABILIZATION ACTIONS TAKEN BY THE U.S. EPA

Beginning on April 15, 1987, following a second reported spill of PCB oil from the Dayton Tire facility, the U.S. EPA initiated a removal action in order to stabilize the site and prevent release recurrences. An investigation of the drainage system of the facility was made and, under the direction of the OSC, the discharge pipe leading from a pumphouse to Wolf Creek was severed and plugged. This action was successful in preventing any further releases into the creek. With the storm drain line severed, all roof drains were plugged and measures were taken to reroute the water collected on the roof on the north side of the facility to ensure interior flooding did not result.

Concurrent with the storm sewer action, 7,000 gallons of oil from transformers and capacitors were drained and pumped into 55-gallon drums. In addition, approximately 2,000 gallons of oil and water from pools in the dikes surrounding the transformers and on floors throughout the building were pumped and drummed.

All the filled drums from the interior of the facility were labeled with PCB stickers and secured inside an on-site storage building.

Other stabilization actions included staging PCB-contaminated metal debris on visqueen inside the facility. Twenty-four hour security was provided for the site after demobilization.

The City of Dayton, in cooperation with the U.S. EPA, is currently implementing a contingency plan to prevent off-site migration of PCBs into the City's sanitary sewer system. The City has severed the Dayton Tire site tie-in lines leading to the sanitary sewer system. The TAT collected two samples from the line to determine if PCBs entered the system. The analytical results of these samples indicated that there were no PCBs present within the lines.

Results of initial sediment samples collected from the Great Miami River and Wolf Creek have indicated PCB concentrations at levels above 10 ppm. To mitigate further downstream contamination, the U.S. EPA conducted a removal action during July 1987, before removal measures were proposed in this report. Therefore, no recommendations or costs for removal actions along the waterways are presented in this Removal Action Plan (RAP).

5.0 ANALYTICAL RESULTS

5.1 PCB and Dioxin Sampling

5.1.1 Wolf Creek and the Great Miami River Analytical Results

Soil and water samples collected on April 5, 1987, were analyzed by OHM Laboratory for PCBs. All soil and sediment samples collected thereafter were analyzed by Pollution Control Science, Dayton, Ohio. As indicated in Table 2, the bank soils in the immediate vicinity of the outfall pipe at Dayton Tire were found to be highly contaminated, having a PCB concentration of 6,020 ppm. Other areas of relatively high concentrations, ranging from 137 ppm to 1,450 ppm, were found in areas of heavy sedimentation, specifically near the booms where the greatest possibility for contaminated soil deposition would be expected. All samples were collected at a depth of 0-3 inches. Background samples collected upstream of Dayton Tire of creek bank soil, creek sediment, and water were all reported below detection limits for PCBs.

Samples of soils and sediments in the Great Miami River also indicated that the highest concentrations were found in areas of heavy silt deposition. The highest reported concentration (29 ppm) within the river was collected approximately 0.3 miles south of the confluence of Wolf Creek and the Great Miami River, while the remainder of the sample concentrations were found to contain

TABLE 2
ANALYTICAL RESULTS OF
WOLF CREEK AND MIAMI RIVER SAMPLING - WATER, SEDIMENTS, AND BANK SOIL
DAYTON TIRE AND RUBBER COMPANY, DAYTON, OHIO

SAMPLE NUMBER	AREA	LOCATION	MATRIX	TYPE	DATE	AROCLOR 1254	AROCLOR 1260	UNITS
1	UP WOLF	AT BRIDGE STRT BRIDGE	WATER	GRAB	4/05	BDL	BDL	ppb
2	UP WOLF	AT BRIDGE STRT BRIDGE	SOIL	COMP	4/05	BDL	BDL	ppm
3	UP WOLF	AT BRIDGE STRT BRIDGE	SED	COMP	4/05	BDL	BDL	ppm
4	UP WOLF	240' DOWN FROM BRIDGE	SOIL	COMP	4/05	BDL	BDL	ppm
5	UP WOLF	240' DOWN FROM BRIDGE	SED	COMP	4/05	BDL	BDL	ppm
6	DN MIAMI	1800' S OF WOLF:I75	WATER	GRAB	4/05	BDL	1.58	ppb
7	DN MIAMI	1800' S OF WOLF:I75	SOIL	COMP	4/05	BDL	25.3	ppm
8	DN MIAMI	1800' S OF WOLF:I75	SED	COMP	4/05	BDL	11.8	ppm
9	DN MIAMI	150' S OF WOLF:3RD ST	SED	COMP	4/05	BDL	BDL	ppm
10	DN MIAMI	150' S OF WOLF:3RD ST	SOIL	COMP	4/05	BDL	1,490.0	ppm
11	WOLF CRK	OUTFALL, DAYTON TIRE	WATER	GRAB	4/05	1,740	3,350	ppb
12	WOLF CRK	OUTFALL, DAYTON TIRE	SOIL	COMP	4/05	BDL	6,020.0	ppm
13	DN WOLF	10' DOWN FROM OUTFALL	WATER	GRAB	4/05	58.2	145	ppb
14	DN WOLF	10' DOWN FROM OUTFALL	SED	COMP	4/05	BDL	75.4	ppm
15	DN WOLF	50' DOWN FROM OUTFALL	WATER	GRAB	4/05	7.02	21.2	ppb
16	DN WOLF	50' DOWN FROM OUTFALL	SED	COMP	4/05	BDL	110.0	ppm
22	DN WOLF	ROSEDALE BRG, DNSTRM	WATER	GRAB	4/06	BDL	BDL	ppb
23	DN WOLF	ROSEDALE BRG, DNSTRM	SOIL	COMP	4/06	BDL	2.50	ppm
24	DN WOLF	ROSEDALE BRG, DNSTRM	SOIL	COMP	4/06	BDL	1.56	ppm
25	DN WOLF	ROSEDALE BRG, UPSTRM	WATER	GRAB	4/06	BDL	BDL	ppb
26	DN WOLF	ROSEDALE BRG, BOOM	SOIL	COMP	4/06	1.29	1.05	ppm
27	DN WOLF	ROSEDALE BRG, BOOM	WATER	GRAB	4/06	BDL	BDL	ppb
28	DN WOLF	ROSEDALE BRG, BOOM	SED	COMP	4/06	BDL	BDL	ppm
29	DN WOLF	DOWNSTREAM BOOM	WATER	GRAB	4/06	BDL	BDL	ppb
30	DN WOLF	DOWNSTREAM BOOM	SED	COMP	4/06	1.87	3.35	ppm
S56	DN MIAMI	2.7 MI DNSTRM OF WOLF	SED	COMP	4/28	BDL	13	ppm
S57	DN MIAMI	2.5 MI DNSTRM OF WOLF	SED	COMP	4/28	BDL	6	ppm
S58	DN MIAMI	1.4 MI DNSTRM OF WOLF	SED	COMP	4/28	BDL	16	ppm
S59	DN MIAMI	0.7 MI DNSTRM OF WOLF	SED	COMP	4/28	BDL	10	ppm
S60	DN MIAMI	0.3 MI DNSTRM OF WOLF	SED	COMP	4/28	BDL	29	ppm
S61	DN MIAMI	0.1 MI DNSTRM OF WOLF	SED	COMP	4/28	BDL	21	ppm
S62	UP MIAMI	0.1 MI UPSTRM OF WOLF	SED	COMP	4/28	BDL	BDL	ppm
S63	DN WOLF	1.3 MI DNSTRM OF SITE	SED	COMP	5/05	BDL	51	ppm
S64	DN WOLF	1.0 MI DNSTRM OF SITE	SED	COMP	5/05	BDL	28	ppm
S65	DN WOLF	0.8 MI DNSTRM OF SITE	SED	COMP	5/05	BDL	4	ppm
S66	DN WOLF	0.5 MI DNSTRM OF SITE	SED	COMP	5/05	BDL	1,140	ppm
S67	DN WOLF	0.4 MI DNSTRM OF SITE	SED	COMP	5/05	BDL	90	ppm
S68	DN WOLF	0.1 MI DNSTRM OF SITE	SED	COMP	5/05	BDL	25	ppm
S69	DN WOLF	0.0 MI DNSTRM OF SITE	SED	COMP	5/05	BDL	137	ppm
S70	UP WOLF	0.3 MI UPSTRM OF SITE	SED	COMP	5/05	BDL	BDL	ppm
S71	UP WOLF	DUPLICATE OF PREVIOUS	SED	COMP	5/05	BDL	BDL	ppm

TABLE 2 (CONTINUED)
ANALYTICAL RESULTS OF
WOLF CREEK AND MIAMI RIVER SAMPLING - WATER, SEDIMENTS, AND BANK SOIL
DAYTON TIRE AND RUBBER COMPANY
DAYTON, OHIO

SAMPLE NUMBER	AREA	LOCATION	MATRIX	TYPE	DATE	AROCLO		UNITS
						1254	1260	
S72	DN MIAMI	0.6 MI DWNSTRM OF WOLF	SOIL	COMP	5/06	BDL	BDL	ppm
S73	DN MIAMI	DUPLICATE OF PREVIOUS	SOIL	COMP	5/06	BDL	BDL	ppm
S74	DN MIAMI	0.3 MI DWNSTRM OF WOLF	SOIL	COMP	5/06	BDL	BDL	ppm
S75	DN MIAMI	1.4 MI DWNSTRM OF WOLF	SOIL	COMP	5/06	BDL	2	ppm
S76	UP MIAMI	0.2 MI UPSTRM OF WOLF	SOIL	COMP	5/06	BDL	BDL	ppm
S77	DN WOLF	1.3 MI DWNSTRM OF SITE	SOIL	COMP	5/06	BDL	BDL	ppm
S78	DN WOLF	1.3 MI DWNSTRM OF SITE	SOIL	COMP	5/06	BDL	BDL	ppm
S79	DN WOLF	0.5 MI DWNSTRM OF SITE	SOIL	COMP	5/06	BDL	BDL	ppm
S80	UP WOLF	0.3 MI UPSTRM OF SITE	SOIL	COMP	5/06	BDL	BDL	ppm

NOTES: BDL = BELOW DETECTION LIMIT (WATER = 1 ppb; SOIL AND SEDIMENTS = 1 ppm)

SAMPLES DATED 4/05/87 AND 4/06/87 WERE COLLECTED BY O.H. MATERIALS UNDER THE SUPERVISION OF THE TAT AND OEPA. SAMPLES WERE ANALYZED AT O.H. MATERIALS LABORATORY.

SAMPLES DATED 4/28/87, 5/05/87, AND 5/06/87 WERE COLLECTED BY TAT AND OEPA PERSONNEL. SAMPLES WERE ANALYZED AT GULF COAST LABORATORY

less than 25 ppm (Table 2). One bank soil sample collected near the confluence of Wolf Creek and the Great Miami River along a high water mark indicated a PCB concentration of 1,490 ppm. Upstream of the Wolf Creek/Great Miami River confluence, sediment concentrations were less than 1 ppm.

The results, as seen in Table 3, of fish sampling by the OEPA along Wolf Creek and the Great Miami River indicate that there has been uptake of PCB from sediments by resident fish populations. Based on the results of the sampling, the Montgomery County Health Advisory Board posted a ban on all recreational water activities, including fishing, for an area extending from two miles upstream of Dayton Tire to three miles downstream of Dayton Tire on the Great Miami River.

5.1.2 On-Site Soil Sampling

Analytical results, as seen in Table 4, of samples collected within the courtyard area of the exterior transformer stations D and E indicate that the soils are contaminated with PCBs, with concentrations ranging from below detection limits to 410 ppm at depths of 0-12 inches. Below this level the PCB concentrations ranged from 2.3 ppm to 3,156 ppm. Sampling below this depth was impractical because of soil conditions and sampling equipment problems.

Samples collected around the perimeter of the property were all reported as below detection limits for PCBs, with the exception of one soil composite of 1.1 ppm. A background sample indicated no detectable levels of PCBs.

5.1.3 Transformer and Capacitor Oils

Transformer oils were found to have concentrations ranging from less than 2 ppm to 1,000,000 ppm, as summarized in Table 5. The highest concentrations were detected in the samples collected from the exterior transformers in areas D and E. Transformer area A had a reported concentration of 890,000 ppm from one of the four transformers. Roof area B transformers also had high concentrations (669,000 ppm and 972,000 ppm); area C transformers, however, were all below 10 ppm. Vault #4 transformers had concentrations below 20 ppm. Only one sample from a capacitor was collected and the concentration was found to be less than 3 ppm.

5.1.4 Vault and Switch Room Surfaces

The vault rooms had no oil present within the disassembled transformers; samples of oil-soaked sediment collected from the floor within each room had concentrations less than 3 ppm as indicated in Table 6. In vault #4, where there were both full and dis-

TABLE 3
ANALYTICAL RESULTS OF FISH TISSUE SAMPLING
DAYTON TIRE AND RUBBER COMPANY
DAYTON, OHIO

SAMPLE NUMBER	LOCATION	FISH DESCRIPTION	PCB CONCENTRATION (PPM)
1	WOLF CREEK, UPSTREAM OF SITE	QUILL BACK SUCKER, WHOLE BODY	6.0
2	WOLF CREEK, UPSTREAM OF SITE	SMALL MOUTH BASS, FILLET	0.3
3	WOLF CREEK, UPSTREAM OF SITE	CARP WHOLE BODY	2.0
4	WOLF CREEK, DOWNSTREAM OF SITE	CARP WHOLE BODY	18.0
5	WOLF CREEK, DOWNSTREAM OF SITE	WHITE SUCKER WHOLE BODY	9.0
6	WOLF CREEK, DOWNSTREAM OF SITE	SMALL MOUTH BASS, FILLET	3.0
7	MIAMI RIVER UPSTREAM OF WOLF	SMALL MOUTH BASS, FILLET	0.5
8	MIAMI RIVER DOWNSTREAM OF WOLF	BLACK RED HORSE SUCKER WHOLE BODY	14.0
9	MIAMI RIVER DOWNSTREAM OF WOLF	SMALL MOUTH BASS, FILLET	0.4

NOTES: SAMPLES COLLECTED BY THE OEPA ON APRIL 9, 1987.
VERBAL RESULTS RECEIVED BY THE U.S. EPA ON MAY 7, 1987.
MONTGOMERY COUNTY BOARD OF HEALTH ISSUED A FISH ADVISORY
ON MAY 8, 1987.

TABLE 4
ANALYTICAL RESULTS OF ON-SITE SOIL SAMPLING
DAYTON TIRE AND RUBBER COMPANY
DAYTON, OHIO

SAMPLE NUMBER	LOCATION	TYPE	DATE	AROCLOR CONCENTRATION (PPM)		
				1242	1254	1260
17	TRANS COURTYARD:0-12"	GRAB	4/06	BDL	486.0	2,670.0
18	TRANS FENCED:0-12"	GRAB	4/06	BDL	48.2	325.0
19	TRANS FENCED:12-24"	GRAB	4/06	BDL	1.76	5.0
20	TRANS FENCED:24-36"	GRAB	4/06	BDL	2.32	BDL
21	ALONG RR TRAX:0-12"	GRAB	4/06	BDL	BDL	BDL
65	FENCE ALONG WOLF CRK	COMP	5/29	BDL	BDL	BDL
66	FENCE ALONG WOLF CRK	COMP	5/29	BDL	BDL	BDL
67	FENCE ALONG WOLF CRK	COMP	5/29	BDL	BDL	BDL
68	FENCE ALONG WOLF CRK	COMP	5/29	BDL	BDL	BDL
69	FENCE ALONG WOLF CRK	COMP	5/29	BDL	BDL	BDL
70	FENCE ALONG WOLF CRK	COMP	5/29	1.1	1.1	1.1
71	FENCE ALONG WOLF CRK	COMP	5/29	BDL	BDL	BDL
72	FENCE ALONG WOLF CRK	COMP	5/29	BDL	BDL	BDL

NOTES:BDL = BELOW DETECTION LIMIT (SOIL = 1 ppm)

ALL SAMPLES WERE COLLECTED BY THE TAT.

SAMPLES COLLECTED ON 4/06/87 WERE ANALYZED AT O.H. MATERIALS
LABORATORY.

SAMPLES COLLECTED ON 5/29/87 WERE ANALYZED AT PCS LABORATORY.

TABLE 5
ANALYTICAL RESULTS OF TRANSFORMER AND CAPACITOR OIL SAMPLING
DAYTON TIRE AND RUBBER COMPANY
DAYTON, OHIO

SAMPLE #	TRANS/CAP NUMBER	DATE	AROCLOR CONCENTRATION (PPM)		
			1242	1254	1260
1	A1	4/22	890,000	<3	<3
2	A2	4/22	<3	<3	<3
3	A3	4/22	<3	<3	<3
4	A4	4/22	<3	<3	<3
6	B1	4/21	<3	669,000	<3
7	B2	4/21	<3	<3	972,000
9	C1	4/21	NOT SMPL	NOT SMPL	NOT SMPL
10	C2	4/21	<3	<3	13
11	C3	4/21	<3	<3	88
12	C4	4/21	NOT SMPL	NOT SMPL	NOT SMPL
13	C5	4/21	NOT SMPL	NOT SMPL	NOT SMPL
21	D1	4/21	NOT SMPL	NOT SMPL	NOT SMPL
22	D2	4/21	<3	728,000	<3
24	E1	4/24	1,000,000	<3	<3
25	E2	4/24	<3	<3	1,000,000
49	SWICH RMI CAP 1	4/27	<3	<3	<3
54	V4-1	5/01	<3	<3	166
55	V4-2	5/01	<3	<3	150
56	V4-3	5/01	<3	<3	142
57	V4-4	5/01	<3	<3	<3
58	V4-5	5/01	<3	<3	<3
59	F-1 (DUP)		<3	<3	831,000
63	V4-6	5/01	<3	<3	7

NOTES: ALL SAMPLES WERE COLLECTED BY THE TAT AND
ANALYZED AT PCS LABORATORY.

TABLE 6
ANALYTICAL RESULTS OF TRANSFORMER AND
CAPACITOR ROOM SURFACES SAMPLING
DAYTON TIRE AND RUBBER COMPANY
DAYTON, OHIO

SAMPLE #	LOCATION	LOCATION DESCRIPTION	DATE	AROCLOR CONCENTRATION (PPM)		
				1242	1254	1260
5	AF	DIKED AREA A2-A4	4/22	NOT SENT	NOT SENT	NOT SENT
8	BF	DIKED AREA B1-B2	4/21	NOT SENT	NOT SENT	NOT SENT
14	CF1	DIKED AREA C1-C3	4/21	<3	<3	40
15	CF2	PUDDLE N. OF C1-C5	4/21	<3	<3	<3
16	CF3	DUPLICATE CF1	4/21	<3	<3	33
17	CFA 1ST	PUDDLE UNDER AREA C	4/23	<3	<3	32
18	CFB1 BM	PUDDLE IN BASEMENT	4/26	<3	<3	228
19	CFB2 BM	PUDDLE W. OF CFB1	4/26	<3	<3	<3
20	CFB3 BM	DIKED AREA W. OF CFB1	4/26	<3	<3	<3
23	DF1	FLOOR AREA AROUND D1	4/21	<3	<3	795,000
28	V1F	VAULT 1 FLOOR	4/26	<3	<3	298
30	V2F	VAULT 2 FLOOR	4/26	<3	<3	<3
32	V3F1	VAULT 3 FLOOR	4/26	<3	<3	14
33	V3F2	FLOOR OUTSIDE VAULT 3	4/26	<3	<3	737,000
34	V4F	VAULT 4 FLOOR	4/26	<3	<3	54
36	V5F	VAULT 5 FLOOR	4/27	NOT SMPL	NOT SMPL	NOT SMPL
47	SR1F	SWITCH ROOM 1 FLOOR	4/27	NOT SMPL	NOT SMPL	NOT SMPL
50	SR2F	SWITCH ROOM 2 FLOOR	4/27	<3	<3	927,000

NOTES: ALL SAMPLES WERE COLLECTED BY THE TAT AND ANALYZED BY PCS
LABORATORY. DETECTION LIMIT = 3 PPM.

assembled transformers were observed, the floor sample concentration was also less than 3 ppm. No sample was collected from vault #5 since there were no transformers observed there. A composite sample of oil collected from switch room #2, inside the room and from a vandalized 20-gallon transformer carcass located at the doorway of the room, had a PCB concentration of 972,000 ppm. A sample from switch room #1 was not collected since no oil was observed.

Samples collected from the vaults and switch rooms were analyzed by TMS Analytical, Indianapolis, Indiana for the presence of dioxins and furans. Analytical results are summarized in Table 7. Results indicate the presence of dioxins and furans in samples collected from vault #4, switch rooms #1 and #2, and the ash pile composite. The samples containing total tetra dioxin and furan may require additional analysis to determine the presence of the 2,3,7,8 isomer.

5.1.5 Interior Drainage System

Samples from eight manholes throughout the facility revealed the presence of PCBs within the interior drainage system of the facility, with the highest concentration being 209 ppm (Table 8). A sample from the sump located within the pumphouse contained a concentration of 9,700 ppm.

5.1.6 Miscellaneous Sampling of the Building

Samples collected from standing pools of oil throughout the facility correlated with concentration ranges of nearby transformers. From this data, it was possible to trace releases within the interior of the facility to specific transformer locations. Samples collected from the contents of three buried railroad tanks located in building 36A had PCB concentrations less than 3 ppm (Table 9).

5.2 Asbestos Results

Jack Hemp of the Regional Air Pollution Control Agency (RAPCA) assisted the U.S. EPA in identifying areas within the facility that contained asbestos. The results of RAPCA's bulk asbestos sampling, summarized in Table 10, indicated samples A1, A3, A4, A5, A6, and A8 contained varying percentages of asbestos, 2% to 85%.

6.0 THREATS TO HUMAN HEALTH AND THE ENVIRONMENT

Imminent threats to human health and the environment posed by the site have been lessened by site stabilization actions conducted by the U.S. EPA. Paragraph (b)(2) of Part 300.65 of the National Contingency Plan (NCP) outlines several conditions which may be

TABLE 7
ANALYTICAL RESULTS OF DIOXIN AND FURAN SAMPLING
DAYTON TIRE AND RUBBER COMPANY
DAYTON, OHIO

SAMPLE NUMBER	LOCATION	DATE	DIBENZO-P-DIOXIN (PPB)				
			TCDD	PCDD	HXCDD	HPCDD	OCDD
27	VAULT 1 FLOOR	4/26	ND	ND	ND	ND	ND
29	VAULT 2 FLOOR	4/26	ND	ND	ND	ND	ND
31	VAULT 1 DRAIN	4/26	ND	ND	ND	ND	ND
35	VAULT 4 FLOOR	4/26	ND	ND	1.62	3.45	ND
48	SWITCH RM 1 FLR	4/27	4.5	ND	ND	1.17	ND
51	SWITCH RM 2 FLR	4/27	569.4	ND	ND	ND	ND
62	4 ASH PILE COMP	5/12	2.9	9.58	20.77	56.23	103.2

SAMPLE NUMBER	LOCATION	DATE	CHLORODIBENZOFURAN (PPB)				
			TCDF	PCDF	HXCDF	HPCDF	OCDF
27	VAULT 1 FLOOR	4/26	ND	ND	ND	ND	ND
29	VAULT 2 FLOOR	4/26	ND	ND	ND	ND	ND
31	VAULT 1 DRAIN	4/26	ND	ND	ND	ND	ND
35	VAULT 4 FLOOR	4/26	ND	ND	3.02	2.84	ND
48	SWITCH RM 1 FLR	4/27	4.24	1.19	ND	1.74	1.81
51	SWITCH RM 2 FLR	4/27	607.7	40.66	ND	56.21	61.14
62	4 ASH PILE COMP	5/12	24.79	44.99	74.21	144.6	121.7

NOTES: ND = NOT DETECTED.

DETECTION LIMIT USUALLY 1 PPB BARRING MATRIX
INTERFERENCE.

ALL SAMPLES WERE COLLECTED BY THE TAT AND ANALYZED
BY TMS ANALYTICAL.

TABLE 8
ANALYTICAL RESULTS OF DRAINAGE SYSTEM SAMPLING
DAYTON TIRE AND RUBBER COMPANY
DAYTON, OHIO

SAMPLE NUMBER	LOCATION	DATE	AROCLOR CONCENTRATION (PPM)		
			1242	1254	1260
26	MANHOLE, EAST AREA	4/23	<3	<3	37
38	MANHOLE 1	4/25	NA	NA	NA
39	MANHOLE 2	4/25	<3	<3	209
40	MANHOLE 3	4/23	<3	<3	70
41	MANHOLE 4	4/26	<3	<3	<3
42	MANHOLE 5	4/28	<3	<3	32
43	MANHOLE 6	4/28	<3	7	<3
44	MANHOLE 7	4/28	<1	<1	<1
52	SUMP 1 EXCAVATED HOLE	4/17	<3	<3	9,700
53	SUMP 2 SOUTH MID BLDG	4/22	<3	<3	<3
73	SAN. SWR LINE, EAST	6/12	PENDING	PENDING	PENDING
74	SAN. SWR LINE, WEST	6/12	PENDING	PENDING	PENDING

NOTES: ALL SAMPLES COLLECTED BY THE TAT AND ANALYZED BY
PCS LABORATORY.
DETECTION LIMIT = 3 PPM.

TABLE 9
ANALYTICAL RESULTS OF GENERAL BUILDING SAMPLING
DAYTON TIRE AND RUBBER COMPANY
DAYTON, OHIO

SAMPLE NUMBER	LOCATION	DATE	AROCLOR CONCENTRATION (PPM)		
			1242	1254	1260
45	PUMP ROOM 1 FLOOR	4/26	<3	<3	18
46	PUMP ROOM 2 FLOOR	4/26	<3	<3	6
60	COOLING OIL, BSMT	5/04	<3	<3	<3
61	RAILROAD CAR COMP	5/12	<3	<3	<3
64	OIL ON CBL IN EXCAVAT	5/05	<3	<3	<3

NOTES: ALL SAMPLES COLLECTED BY THE TAT AND ANALYZED BY
PCS LABORATORY.
DETECTION LIMIT = 3 PPM.

TABLE 10
ANALYTICAL RESULTS OF BULK ASBESTOS SAMPLING
DAYTON TIRE AND RUBBER COMPANY
DAYTON, OHIO

SAMPLE NUMBER	ROOM NUMBER/LOCATION	MATERIAL	ASBESTOS (%)
A1	4C, PIPE	DUCT WRAPPING	85
A2	4C, PIPE	DUCT WRAPPING	0
A3	2A, FLOOR	WET INSULATION	50
A4	36G, WEST SIDE FLOOR	DRY INSULATION	2
A5	36G, EAST SIDE FLOOR	DRY INSULATION	75
A6	1H/1J, BOILER ROOM	DRY INSULATION	85
A7	BOILER ROOM ANNEX	SPRAY ON	0
A8	36F, FLOOR	AIR CELL	85
A9	5A, PIPE UNDER FLOOR	BROWN MATERIAL	0
A10	5A, PIPE UNDER FLOOR	BROWN MATERIAL	0

NOTES: ALL ASBESTOS SAMPLING WAS CONDUCTED BY THE
REGIONAL AIRPOLLUTION CONTROL AGENCY (RAPCA)
ON APRIL 15, 1987.

considered to warrant a removal action. Based on the results of sampling conducted by the TAT and observations, several of these conditions are present at the Dayton Tire site. The conditions applicable to the Dayton Tire site include:

- o Actual or potential exposure to hazardous substances or pollutants or contaminants by nearby populations, animals, or food chain;
- o Hazardous substances or pollutants or contaminants in drums, barrels, tanks, or other bulk storage containers, that may pose a threat of release;
- o High levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface, that may migrate; and,
- o Threat of fire or explosion.

The following subsections detail how these conditions are specific to the Dayton Tire site.

6.1 Threats Related to National Contingency Plan

6.1.1 Actual or Potential Exposure

The Dayton Tire facility is located in a mixed residential, commercial, and industrial area. The nearest homes are located within 500 feet of the site, and the neighborhood has a large number of children. Access to the site could be gained through gaps in the fence surrounding the site or through an open pedestrian entrance on the north end of the building. Broken ground-level windows provide entry to the building itself. Unwarranted access, which has been substantiated by documented vandalism incidents at the site, could allow for exposure to the high levels of PCBs.

In addition, a potential threat of exposure to the food chain exists. Samples collected on April 9, 1987 by the OEPA have documented PCB concentrations up to 18 ppm in fish downstream of the site in Wolf Creek. The Food and Drug Administration has set a 2 ppm limit on fish used for human consumption. PCBs in fish tissue have a tendency to bioaccumulate.

The PCB concentrations found in the sediment pose additional threats. A possible route of exposure to swimmers in the waterways through skin contact or ingestion of contaminated water and sediments exists. Acknowledging this threat and the hazards associated with consuming PCB-contaminated fish, the Ohio Department of Health and the Montgomery County Combined General Health District posted warning signs, advised the public not to eat fish

from Wolf Creek, and recommended that the creek not be used for recreational purposes. This ban is to continue until the contaminated sediments (above 25 ppm) within the waterway are removed.

6.1.2 Hazardous Substances Posing a Threat of Release

All transformers, capacitors, and transformer vaults were drained of liquids during the initial U.S. EPA emergency action. However, additional materials of concern are still present at the site. Three buried railroad tankers full of liquid are present on-site, adjacent to Wolf Creek. The porosity of the landfill material covering the tankers may present a pathway for any liquid that escapes the tankers to seep into the ground water or be released into Wolf Creek.

Other containers of materials remaining in the basement of the building include eight 12,000-gallon storage tanks and numerous mixing vats. The amount of material contained and the structural integrity of the tanks and vats could not be determined. Approximately 100 drums containing unknown material were also observed on the grounds of Dayton Tire. Many of these drums were either corroded or leaking.

6.1.3 Substances that May Migrate

Sample results have documented the presence of PCBs in bank soils and creek bed sediments adjoining the outfall from Dayton Tire and in soil from the courtyard area of the exterior transformer stations. Bank soils and creek bed sediments could be carried further downstream by creek flow, and contaminated soil from the site could be transported by wind erosion.

6.1.4 Threat of Fire or Explosion

Documented arson incidents have occurred at the Dayton facility. A fire at the facility poses the threat of producing toxic airborne dibenzo-p-dioxins and dibenzofurans as by-products of the incomplete combustion of PCBs.

The solvents that are suspected on site are extremely flammable. Tanks or drums containing these solvents could explode from the heat of a fire. Fire and explosions not only present immediate dangers of heat and smoke, but are also capable of spreading harmful particulate matter over large areas.

6.2 Threats Related to Specific Chemicals On Site

Contaminants found on site that pose a threat to the environment include PCBs, dibenzo-p-dioxins, dibenzofurans, and asbestos. The threats associated with these chemicals are presented below.

6.2.1 Polychlorinated Biphenyls

PCBs are known under a variety of names, including Aroclor and Kenclor. They have been used as heat exchangers (i.e., dielectric fluids in transformers and capacitors), lubricating fluids, plasticizers, pesticide extenders, adhesives, printing inks, and surface coatings. Based on available data, both the International Agency for Research on Cancer (IARC, 1978) and the U.S. EPA (EPA, 1978) have concluded that PCBs should be considered a potential human carcinogen.

From all studies to date, it is clear that a minimum exposure to PCBs can produce dermatological effects and liver damage. Because of the long life of PCBs and their tendency to bioaccumulate in various human tissues, the potential of substantial chronic and delayed effects is substantially increased.

6.2.2 Dioxins and Furans

Dibenzo-p-dioxins and dibenzofurans may be created by the incomplete combustion of PCBs and phenols. Analytical results of samples collected by the TAT confirm that dioxins and furans are present in the burn areas at Dayton Tire.

According to a report issued by the Center for Disease Control of the U.S. Department of Health, Education, and Welfare, the acute toxicity of the different chlorinated dioxins and furans depends on the number and position of the chlorine atoms in the ring system. Non-halogenated dibenzodioxin, 2,7-dichlorodibenzodioxin, and octachlorodibenzodioxin (OCDD) are low in toxicity, but 2,3,7,8-tetrachlorodibenzodioxin (TCDD) is extremely toxic (Archives of Environmental Health, March/April 1977). Actions conducted at dioxin sites in the state of Missouri removed the 2,3,7,8-TCDD isomer at levels greater than 1 ppb. Total levels of tetrachlorodibenzodioxin, which include isomers such as 2,3,7,8-TCDD, have been detected as high as 569 ppb in a capacitor room at the Dayton Site.

The toxic effects of TCDD suggest that it accumulates in body tissue after recurrent exposure. Initially, it was believed that TCDD degraded rapidly to less toxic compounds; now, however, it is known that TCDD is a very stable compound with a half life of about 1 year. Acute symptoms including chloracne, digestive disorders, enzyme disorders, and muscular and joint pain have been noted to result from inhalation or ingestion of dioxins and furans. Dioxins are also a potential human carcinogen.

6.2.3 Asbestos

Asbestos is a naturally occurring fibrous mineral substance used extensively in commercial products, including pipe insulation, wall insulation, and a variety of textile products. Friable asbestos is considered hazardous because, when disturbed, asbestos fibers become suspended in the air, thereby presenting hazards via inhalation. Chronic exposure to airborne asbestos often causes respiratory diseases including asbestosis, lung cancer, mesothelioma, and possible cancer of other vital organs. Symptoms of asbestos respiratory disease generally do not appear for 20 or more years after initial exposure to the airborne asbestos.

7.0 PROJECT PLANNING STUDIES

Prior to initiation of a removal action at Dayton Tire Company, a study/project planning phase should be conducted to develop a comprehensive work plan and accurate estimate of cost. Because of the complexity of the removal work required to mitigate the hazards posed at the site and the expansiveness of the facility, it is imperative that specific factors are identified and closely investigated. Without careful consideration of these factors, an accurate work plan cannot be fully developed. The following recommended studies, once completed, should provide the information needed to develop an accurate removal action plan for the Dayton Tire site. Actual cost projection calculations are located in Attachment A.

7.1 Extent of Contamination Study

7.1.1 PCB and Dioxin Sampling

Building Surfaces

Further site characterization sampling should be performed as a continuation of the sampling conducted during the initial response. To fully address the cleanup, the sampling should consist of gridding the site, both the interior and exterior facility, and collecting samples where data is missing or ambiguous. Swipe samples of the interior should be collected to determine the scope of the cleanup necessary and to aid post-cleanup documentation. Since there are dioxins on site the extent of contamination study should focus on delineating the areas where dioxins are present prior to attempting to identify the extent of PCB contamination. Once the boundaries for dioxin contamination are determined, sampling outside these areas for PCB contamination can be conducted. The cost estimate presented below and in Attachment A-1.1 takes into account scenarios involving only PCBs or PCBs present with dioxins.

	<u>\$ Cost Range</u>
Personnel and Equipment	\$ 15,301.00 - \$ 23,054.00
Analytical Cost	\$ 16,500.00 - \$ 179,500.00
<hr/>	
Total Cost	\$ 31,801.00 - \$ 192,554.00

Soils

High concentrations of PCB have been detected in soils in the courtyard area. Because soil sample results have isolated the general locations of PCB-contaminated soils, no further perimeter surface soil sampling is necessary. Additional soils samples in the courtyard may be required to delineate the extent of contamination. Depth samples are also required near the pipes leading from the sumphouse.

The courtyard consists of two sections: one area is approximately 50 feet by 75 feet, and the second area is approximately 30 square feet. The large area can be reached by a backhoe; the smaller area can be reached by a small accessway between 2 corners of the building. Transformers located at the east edge of each of the 2 sections are the probable sources of contamination for the areas.

Previous attempts at collecting soil samples at the site have been unsuccessful due to problems encountered with soil conditions and the sampling method. Because of this, additional depth samples should be collected using a different method. A backhoe could be used to dig holes in the large area from which samples can be collected. Samples from this area should be collected at depths of 0-6 inches, 6-12 inches, 12-24 inches, and 24-36 inches. Samples should be collected at 25 foot intervals based on a grid system. This grid can be varied by the samplers to avoid area of asphalt and the railroad tracks. Within the smaller courtyard area, additional samples should be collected 10 feet from the transformers. Because a backhoe cannot be fit in the smaller area, a bobcat may be used to excavate the test holes. These holes should be approximately 2 feet deep on a 10 foot grid. Surface soil samples should be collected at all locations; for areas where high contamination is expected, samples should be collected at various depths to determine the depth of contaminated soil. The samples will be analyzed for PCBs unless additional site information indicates the possible presence of other contaminants.

Since the soil within the courtyard consists primarily of sand and loose fill dirt, PCB oil from Area E transformers could have flowed underneath the concrete pad that support the transformers. A drill rig may be required to collect depth samples under the pad.

Consideration should be made of possible contamination of the soils underlying the storm drain pipe leading from the sump house to the facility. This pipe, which lies 15-20 feet below grade, carried PCB oil from the interior drain system into the sump house; however, it is not known if this pipe is void of leakage points. Approximately 250 feet of this pipe remains buried between the sump house and Wolf Creek. Costs associated for an extent of soil contamination investigation includes the following estimates determined in Attachment A-1.1:

	<u>\$ Cost Range</u>
Personnel and Equipment	\$ 6,190.00 - \$12,380.00
Analytical Cost	\$ 3,125.00 - \$ 6,250.00
	<hr/>
Total Cost	\$ 9,315.00 - \$18,630.00

Drain System

Preliminary sampling of the storm drain system inside the facility has shown that PCB contamination exists in localized areas. Because PCB concentrations were detected in excess of 25 ppm, further investigation of the drain system is recommended. In many cases, transformer oils from overturned units may have drained into floor drains and the oil transported into the sump house following a heavy rain. The cost projected in Attachment A-1.1 for additional sampling of the drain system includes the following:

	<u>\$ Cost Range</u>
Personnel and Equipment	\$ 1,308.00 - \$ 3,296.00
Analytical Cost	\$ 2,500.00 - \$ 5,000.00
	<hr/>
Total Cost	\$ 3,808.00 - \$ 8,296.00

On-Site Storage Tanks

The eight 12,000-gallon tanks adjacent to Vault 4 in the basement of the facility should be sampled and analyzed for possible PCB contamination and disposal/incineration parameters. Although a sample collected from the pump room that transported oil from these tanks to lines throughout the facility contained a PCB concentration less than the action level for cleanup, the possibility remains that some PCB contamination may be present within the tanks and feeder lines. Any additional tanks located in the facility that were not previously noted should also be sampled and analyzed for the presence of PCBs and disposal/incineration parameters to determine appropriate disposal options. The costs associated with investigation of the above described tanks are presented in Attachment A-1.1 and include:

	<u>\$ Cost Range</u>
Personnel and Equipment	\$ 554.00 - \$ 1,962.00
Analytical Cost	\$ 1,500.00 - \$ 3,200.00
	<hr/>
Total Cost	\$ 2,154.00 - \$ 5,162.00

7.1.2 Unknown Chemicals

Because of the wide variety of chemicals used during the manufacturing of tires and rubber products at the facility, it is possible that small quantities of these chemicals still exist on-site in the various drums, pools, and reservoirs located throughout the facility. Approximately 100 55-gallon drums present on-site should be sampled, tested for compatibility, composited, and analyzed for disposal/incineration parameters. Based upon the results of the analysis, bulking for transportation and disposal may be deemed feasible.

In addition to these tanks, the three buried railroad tanks located within building 36A should be sampled and analyzed for disposal/incineration parameters. Although the PCB concentration in these tanks is less than 3 ppm, it is not known if the contents of the tanks are a hazardous. For the purposes of this estimate, the tanks will be treated and disposed of assuming them to be hazardous. The cost estimate range for the investigations includes the following from Attachment A-1.1:

	<u>Cost Range</u>	
Personnel and Equipment	\$	5,007.00 - \$ 7,661.00
Analytical	\$	3,500.00 - \$ 8,500.00
TOTAL COST		\$ 8,507.00 - \$ 16,161.00

7.1.3 Asbestos Sampling

Initial sampling of material within the facility indicated that asbestos was used for pipe and tank insulation as well as for roofing and other construction materials. Asbestos removal will only address the friable asbestos, with no removal of intact asbestos planned. Additional sampling of bulk asbestos to determine areas where asbestos is present should be conducted in cooperation with the RAPCA.

Bulk Asbestos Sampling Cost Estimate

To fully determine the areas of friable asbestos, it is estimated that the service of four 2-men sampling teams will be necessary to cover the building over a 2-day time period.

Approximately 50 samples would be collected and analyzed for bulk analysis, as indicated in Attachment A-1.1.3.

	<u>Cost Range</u>	
Personnel and Equipment	\$	3,639.00 \$ 9,124.00
Analysis	\$	10,000.00 \$ 20,000.00
TOTAL COST		\$ 13,639.00 \$ 29,124.00

7.2 Site Safety and Contingency Plan Study

Prior to the initiation of a removal plan at the facility, careful attention should be given to the development of a site safety plan and associated contingency plans. The size of the facility and the abundance of physical and chemical hazards necessitates development of a safety plan that ensures the safety of the workers and surrounding community. Such planning may require an investigation of the structural stability of roof, wall, and floor areas where workers may be subject to endangerment. The

contractor's responsibilities and plan of protection should be clearly defined in the site safety plan, as should delineation of the work zones, minimum personnel protection requirements, associated risks, and decontamination procedures.

As part of the site safety plan, a contingency plan should also be prepared for addressing emergency responses in the event of a fire, explosion, or spill. Specific information should be presented in the contingency plan pertaining to the local fire department capabilities, availability of emergency medical treatment, emergency evacuation routes, and emergency communication. For purposes of this report, no cost estimate for development of a site safety and contingency plan will be presented.

8.0 REMOVAL GUIDELINES AND COST REQUIREMENTS

8.1 Site Security and Administration

Site security, consisting of 24-hour guard service, should continue throughout the duration of the project to prevent unlawful trespassing. Additional fence repair may also be necessary.

Before the clean-up activities begin, office trailers should be mobilized along with a decontamination trailer. Electrical and telephone installations were made during the initial response by the U.S. EPA, but only necessary lines have been kept intact. It is anticipated that these lines will be available to the cleanup contractor, although additional lines may be required. As shown in Attachment A-2.1, the estimated cost for site security and administration for a period between 75 and 140 work days is between \$241,740 and \$430,732.

8.2 Water Removal Contingency Plan

A separate contingency plan for the site has been developed for the removal of excessive rainfall and to prevent water from backing up into the building as a consequence of the storm discharge pipe being severed during the initial response. To avoid this situation, crews may be mobilized to pump excess water from the drain system leading from the building to an exterior pump house. This will prevent additional migration of PCB oil through the drain system or across floors.

The costs presented within this section assumes from four to six emergency pumping operations, covering a total of 8 to 12 days, and employing trash pumps to draw water directly from the basement drain system into existing on-site storage facilities. The cost for the disposal of the PCB contaminated water is based upon current incineration and transport cost to Pyrochem, Coffeyville, Kansas. For purposes of this cost estimate the volume of water generated under this scenario would be between 50,000 and 150,000

gallons. It is estimated that implementation of a water removal contingency would cost between \$556,173 and \$1,659,259. Attachment A-2.2 provides a breakdown of the cost presented.

8.3 Transformer and Capacitor Removal and Staging

8.3.1 Inventory of Transformers and Capacitors

A total of thirty-five transformers were observed on the premises. Two additional transformers were reported to be located within vault 5, however, they were never observed. Thirteen transformers were located in four areas upon the roof; 22 transformers were within five sub-basement vaults; and, 2 transformers were outside the building at ground level.

In addition to the transformers, two switch rooms located on the first floor of the facility contain approximately 50 5-gallon to 20-gallon capacity capacitors and 6 1-gallon capacitors. A 20-gallon transformer carcass was located in switch room 2, however, it was removed by the U.S. EPA and has been stored on site with the drums of PCB oil.

8.3.2 Removal Methods

Transformers from roof areas A, B, and C can be removed with a helicopter. This approach takes into account the factors of inaccessibility and the questionable stability of portions of the roof. The transformers could be set down adjacent to building number 44, wrapped in visqueen, and staged inside with a towmotor. Building 44 has access and size to accommodate all 35 transformers, which would require staging.

The two transformers in area D are located on an exterior mezzanine roof level, approximately thirty feet above the ground. The weight of these transformers precludes the use of a helicopter, but a crane, may be able to maneuver these transformers from the mezzanine level onto the open ground level located just west of the mezzanine. Once on the ground, a towmotor could stage the transformer units into building 44.

The two area E transformers outside the building on ground level, are readily accessible and could be towed to the staging area in Building 44.

The removal of transformers from within the vault areas may require the demolition of surrounding concrete block walls, which were built after the installation of the transformers. The walls are approximately 10 feet high and can be dismantled using scaffolding, pneumatic jack hammers, and a uniload. After gaining

access to the vaults, transformers could be moved through the basement area by towmotor and lifted out through an access port in room 5A. The transformers would then be staged inside building 44.

The 56 capacitors, which have already been drained of oils, could be placed in 55-gallon drums and staged in Building 44 using a towmotor. Packing these capacitors will require an estimated 20 open-top drums.

Based on currently available information, the cost to remove and stage the transformers and capacitors will range between \$55,000. and \$84,700. Attachment A-2.3 contains details of the costing information.

8.4 Scrap Metal and Debris Removal and Staging

8.4.1 Inventory of Debris Quantities

Four primary types of contaminated scrap and debris will require removal using the methods discussed below. Scrap and debris to be removed include: internal steel windings removed from the transformers by salvagers; contaminated cinder block walls enclosing the transformer vaults; miscellaneous debris that was contaminated by spilled PCB; and chipped concrete flooring and decking generated during scaling operations. Table 11 indicates estimated volumes and weights for the four types of contaminated debris.

8.4.2 Removal Methods

All four types of contaminated debris may be handled in a similar manner. A bobcat may be used to load debris into dumpster boxes mounted on a towmotor. These dumpster boxes should be equipped with a release to allow controlled dumping of the contents. The towmotor could then transport the material to the loading dock and dump into roll-off boxes. As soon as the roll-offs are filled, they may be manifested and shipped for disposal.

Contaminated built-up roofing materials can be removed in a two-stage method. First, the tar and felt can be stripped off using coal shovels. The remaining contaminated concrete can be removed with pneumatic chippers. All debris would be wheel-barreled to a skylight and dumped into a chute, which would empty into a dumpster box. The material would then be unloaded into a roll-off.

Contaminated concrete flooring within and near the concrete vaults would have the top 1/2 inch of concrete removed with a scaling machine. This method would allow the most heavily contaminated surfaces to be completely removed without involving the

TABLE 11
ESTIMATED DEBRIS QUANTITY
DAYTON TIRE AND RUBBER COMPANY
DAYTON, OHIO

MATERIAL	VOLUME (CU. YDS)	WEIGHT (LBS)
TRANSFORMER STEEL WINDINGS	195	20,000
CINDER BLOCK WALL PIECES	75	80,000
CHIPPED CONCRETE	15	36,000
MISCELLANEOUS DEBRIS	50	20,000
TOTAL CONTAMINATED MATERIAL	335	156,000

use of a laser washer, which typically involves the generation of large quantities of contaminated water requiring costly disposal and/or treatment.

Based on currently available information the cost to remove and stage scrap metal and other debris would range between \$9,869. and \$19,956. Attachment A-2.4 contains details of the cost estimate.

8.5 Liquid/Oil Removal

8.5.1 Inventory of Liquid/Oil Pools

Building 36A was built over three underground railroad tanks, each full of unknown material. Specific information of the tank sizes is not available. For estimating purposes, the following assumptions have been made: the contents are hazardous, each tank contains approximately 12,000 gallons of material, and 80% of the material is pumpable with the remaining 20% being non-pumpable sludge.

8.5.2 Removal Method

Building 36A is readily accessible and over-the-road equipment can be placed adjacent to the building. Six thousand gallon vacuum tankers can be used to remove all pumpable liquids from the tanks. The removal of the sludge will require the use of a positive air displacement unit, such as a Supersucker, equipped with a rear dump gate that would allow for the sludges to be immediately off-loaded into roll-off boxes for transportation/disposal.

Manned entry into the tanks will probably be necessary to remove the sludges and wash down the interior walls of the tanks. This procedure would require strict adherence to safety protocols for tank entry.

An estimated cost range for the removal of the tanks contents is from \$11,808. to \$17,712. Attachment A-2.5 contains details of the cost estimate calculations.

8.6 Asbestos Abatement

Based on the initial sampling of materials observed to be asbestos, it is estimated that roughly 7,000 lineal feet of asbestos piping and asbestos-covered tanks and boilers will require partial removal. Although additional sampling may indicate that more areas would need to be addressed as part of the asbestos removal program.

8.6.1 Removal Techniques

Work areas where asbestos removal is to be conducted should be isolated through the use of containment barriers and a negative air pressure system consisting of low-speed exhaust fans with a High Efficiency Particulate Absolute (HEPA) filter. In addition, to facilitate final cleanup, walls and floors should be covered with plastic. The work zones should be posted as asbestos removal areas pursuant to 29 CFR 1910.1001 (g)(1).

The work area will require Level B protection or a positive pressure respirator to meet the Occupational Safety and Health Administration (OSHA) work-zone standards. Air monitoring must be conducted at three locations outside the work area, including the HEPA filter exhaust. Five samples at each location must be collected daily.

The asbestos removal will be conducted in two types of areas: one where PCBs and possible dioxin are located and the other being areas where only the removal of asbestos is necessary. Although the removal procedures will be the same for each area, the final decontamination of the areas will differ, as is discussed later.

To the extent practicable, all piping, equipment, and building components either covered with or containing friable asbestos should be removed and transported to a central point within the work zone where the asbestos can be removed from the component and packaged for disposal. If the asbestos must be removed at its present location, steps should be taken to minimize the release of asbestos fibers into the air, including but not limited to, wetting the asbestos. Scaffolding and hydraulic lifts will be necessary for reaching asbestos, and provisions must be made for equipment to lower the asbestos materials to ground levels.

In order to minimize final cleanup of the work areas, all machinery that is free of contamination prior to the asbestos removal should be covered with plastic.

8.6.2 Removal Methods

The removed asbestos must be wetted and placed into 6-mil sealable plastic bags which will then be placed into a Department of Transportation (DOT) 21C 55-gallon fiber drum or DOT-approved metal drums, Series 5, 6, or 17. All plastic sheeting, tape, cleaning materials, clothing, and other disposable materials used in the work area must be disposed of in the same manner. The container must be labeled as required by 29 CFR 1910.1001 (g)(2).

All asbestos-containing waste materials must be deposited at an EPA-approved waste disposal site that is operated in compliance with 40 CFR 61.25. Any asbestos material that shows signs of having been contaminated with PCBs or is shown to be contaminated with PCBs (by testing) must be disposed of as PCB contaminated solids pursuant to 40 CFR 761.60.

Decontamination of PCB-free areas should be accomplished by allowing the dust in the work areas to settle for 24 hours. A HEPA vacuum must then be used to clean all surfaces in the work area. Depending upon the types of surfaces in the work area, further decontamination to compliance limits can be accomplished by: 1) repeating the sequence of rewetting surface area followed by another drying period and vacuuming; and/or, 2) application of a sealant over building surfaces and exposed asbestos.

Decontamination of areas exposed to PCB contamination and therefore requiring PCB decontamination would require that the initial cleanup steps be taken and then a sealant applied to all exposed asbestos surfaces. This sealant should be resistant to PCB cleanup solvents. The PCB decontamination procedure should be adequate to remove the remaining asbestos fibers.

For purposes of estimating cost, it is assumed that the asbestos abatement work will require between 20 and 50 days to complete. It is assumed that the work will require a minimum of 11 cleanup technicians. The cost estimate shown in Attachment A-2.6 takes into account the use of air monitoring detection pumps, hydraulic lifts, scaffolding, emergency lighting and personnel protection. Based on these parameters, it is estimated that the work will cost between \$391,300 and \$977,600. No costs for transport and disposal of the asbestos are included in these estimates.

8.7 Decontamination

8.7.1 Transformer Stations, Vaults, and Switch Rooms

All surface areas which are contaminated and are impractical to remove for disposal must be decontaminated. These surfaces include ceilings, walls, floors, transformer pads, and miscellaneous machinery.

8.7.1.1 Exterior Transformer Stations

The concrete transformer pads located on the roof Area E may be decontaminated by double washing with 1,1,1-trichloroethane (TCA). The TCA should be liberally brushed onto the concrete and absorbed with a floor dry product. The PCBs are bound by the floor dry as the solvent evaporates. Generally, two applications of solvent and floor dry are necessary. Floor dry could be drummed, lowered off the roof, and dumped into roll off boxes.

Because the transformer pads in area D and E was saturated with pure PCB oil, these slabs should be excavated and landfilled.

8.7.1.2 Interior Transformer Vaults, Switch Rooms and Spill Areas

Ceiling vaults and adjacent areas that were contaminated with PCB soot during the burning of insulation can be decontaminated utilizing high pressure/hot water washers with a soap additive. All area drains will be plugged prior to washing, therefore, requiring that a minimum amount of decon water is used. Water can be squeegeed to a collection point where a vacuum tanker can draw off the rinse.

Highly contaminated floors may require removal of the top half inch of concrete with a concrete scaler. All contaminated floors could then receive sufficient TCA washes to reduce the levels of PCBs below the clean up standards.

Based on currently available information, the decontamination of transformer stations, vaults and switch rooms would cost between \$52,275. and \$76,250. Refer to Attachment A-2.7.1.

8.7.2 Storm Drain System

PCBs have contaminated an estimated 900 lineal foot section of storm drain. To decontaminate this section, a high pressure water lance can be used. The lance tip should be self-propelled and attached to flexible, stainless steel hose. The system would be flushed from high to low elevations through access points spaced approximately 200 feet apart. A vacuum tanker stationed at the system's collection point could recover all rinse water.

Based on currently available information this decontamination procedure would cost between \$5 to \$9 per lineal foot for a range of \$4,500 to \$8,100.

8.7.3 Soil Removal

Removal of soil from the Dayton Tire property site will depend on the results of additional soil sampling. Any soils found with concentrations over 25 ppm, in accordance with current Federal PCB clean-up standards, should be excavated and properly disposed.

Backhoes or Bobcats with backhoe attachments will excavate the contaminated soils to an assumed maximum depth of six feet. A roll-off box located adjacent to the removal area can be used to stage the contaminated soil. The volume of soil requiring excav-

ation is estimated between 150 and 1,000 cubic yards and would cost between \$3,900 and \$26,000 based on a unit cost of \$26/cubic yard as noted in Attachment A-2.7.

8.8 Post Cleanup/Decontamination Sampling

Following decontamination of the facility, a post-removal sampling program must be implemented to document that the cleanup levels have been achieved to the extent practicable. Sampling should entail collecting swipe samples from each transformer area, vault, switch room, spill area, drain, tank, pit, or vat that required decontamination. Grab samples of excavated soils should also be included in the post-cleanup sampling program. A qualified industrial hygienist should conduct a visual inspection of the facility following cleanup to properly document the complete removal of all friable asbestos. Based on the assumption in Attachment A-2.8 that between 100 and 250 swipe samples for PCB analysis will be required, it is estimated that the post sampling program would cost between \$9,100 and \$22,150.

8.9 Transportation and Disposal

Cost estimates for transportation and disposal of the liquid and solid waste streams will depend on the approach determined to be most effective for the Dayton Tire site. Liquids will be disposed of by either incineration or detoxification. Detoxification is appropriate only for liquids with PCB concentrations less than 500 ppm. Methods for shipping will include drumming and bulking.

Solid wastes may either be PCB contaminated material or asbestos. PCB contaminated transformers and debris may be landfilled at the Chemical Waste Management (CWM) landfill in Emelle, Alabama. Drums of capacitor carcasses will be incinerated. Drums and bags of asbestos may be disposed of at a sanitary or industrial landfill. PCB-contaminated soils removed from on-site and from the clean-up of Wolf Creek may be disposed at the CWM landfill in Emelle, Alabama, or they may be transported to Coffeyville, Kansas and incinerated at the National Electric Company facility.

The total cost estimate for disposal of liquids, solids, soils and asbestos would be between \$254,650 and \$520,925. The cost estimate calculations for each disposal parameter are included in Attachment A-2.9. These costs are presented in a range from minimum to maximum costs which will be directly affected by the quantity of waste, method of disposal, and distance required to transport.

The presence of dioxin may impact any disposal options presented.

9.0 COST SUMMARY

9.1 Contracted Costs

	<u>Range</u>	
	<u>Low</u>	<u>High</u>
7.0 Project Planning Studies	N/C	N/C
7.1 Extent of Contamination Studies	\$ 75,290	\$ 281,021
7.2 Site Safety and Contingency Plan	N/C	N/C
8.0 Removal Guidelines and Cost Estimates		
8.1 Site Security and Administration	241,740	430,732
8.2 Water Removal Contingency Plan	556,173	1,659,259
8.3 Transformer and Capacitor Removal and Staging	55,000	84,700
8.4 Scrap Metal Removal and Staging	9,869	19,956
8.5 Liquid and Oil Removal and Staging	11,808	17,712
8.6 Asbestos Abatement	391,300	977,600
8.7 Decontamination	60,675	110,350
8.8 Post Clean-up/Decontamination Sampling	9,100	22,150
8.9 Transportation and Disposal	254,650	520,525
	-----	-----
Subtotal	\$1,665,605	\$4,124,005
		OR
	\$1,665,600	\$4,124,000
	=====	=====

9.2 Project Costs

Cost Group

	<u>Range</u>	
	<u>Low</u>	<u>High</u>
Contracted Costs	\$1,665,600	4,124,000
TAT Costs	100,000	200,000
U.S. EPA Costs	60,000	100,000
	-----	-----
SUBTOTAL	\$1,825,600	\$4,424,000
15% Project Contingency	273,840	663,600
	-----	-----
TOTAL	\$2,099,440	\$5,087,600
		OR
	\$2,099,500	\$5,088,000
	=====	=====

REFERENCES

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980.

Superfund Amendments and Reauthorization Act (SARA) of 1986. (P.L. 99499).

National Contingency Plan, 40 CFR, Part 300.65 (b) (2).

Federal Register. U.S. Environmental Protection Agency. Polychlorinated Biphenyls Spill Cleanup Policy; Final Rule. 40 CFR Part 761. April 2 1987.

U.S. Environmental Protection Agency, "Asbestos Waste Management Guidance". Office of Solid Waste, Washington, D.C., EPA 530-SW-85-007, May 1985.

Kimbrough, R.D.; Carter, C.D.; Liddle, J.A.; Cline, R.E.; and, P.E. Phillips. "Epidemiology and Pathology of a Tetrachlorodibenzodioxin Poisoning Episode." Archives of Environmental Health, March/April 1977, pp. 77-87.

State of California, Department of Health Services/Department of Industrial Relations, The Toxicology of PCBs, January 1981.

ATTACHMENT A
COST ESTIMATE CALCULATIONS
DAYTON TIRE AND RUBBER COMPANY
DAYTON, OHIO

Redacted-not relevant to selection of removal action

ATTACHMENT B
SITE PHOTOGRAPHS
DAYTON TIRE AND RUBBER COMPANY
DAYTON, OHIO

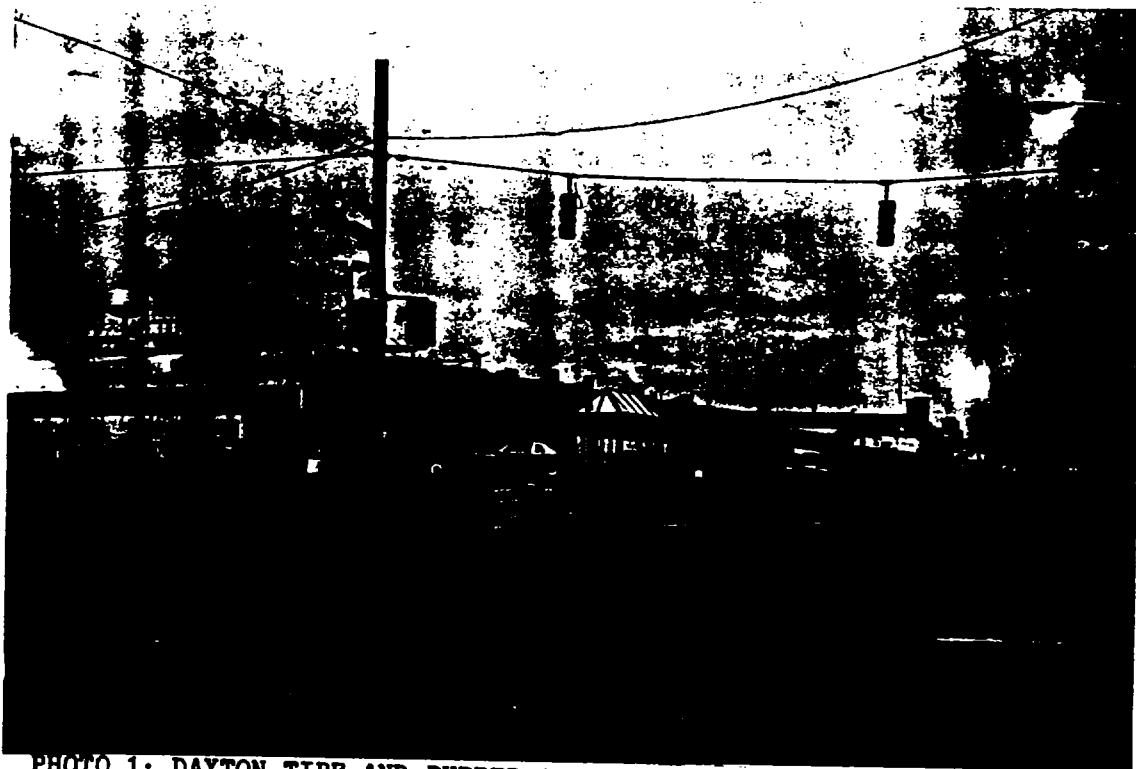


PHOTO 1: DAYTON TIRE AND RUBBER COMPANY, Dayton, OH.
Exterior of the Dayton Tire and Rubber Company looking west on
Riverview Avenue from the intersection of Riverview and Rosedale
Avenues.
(Photo by Scoville, 4/7/87, 0950 hrs.) *WHS*

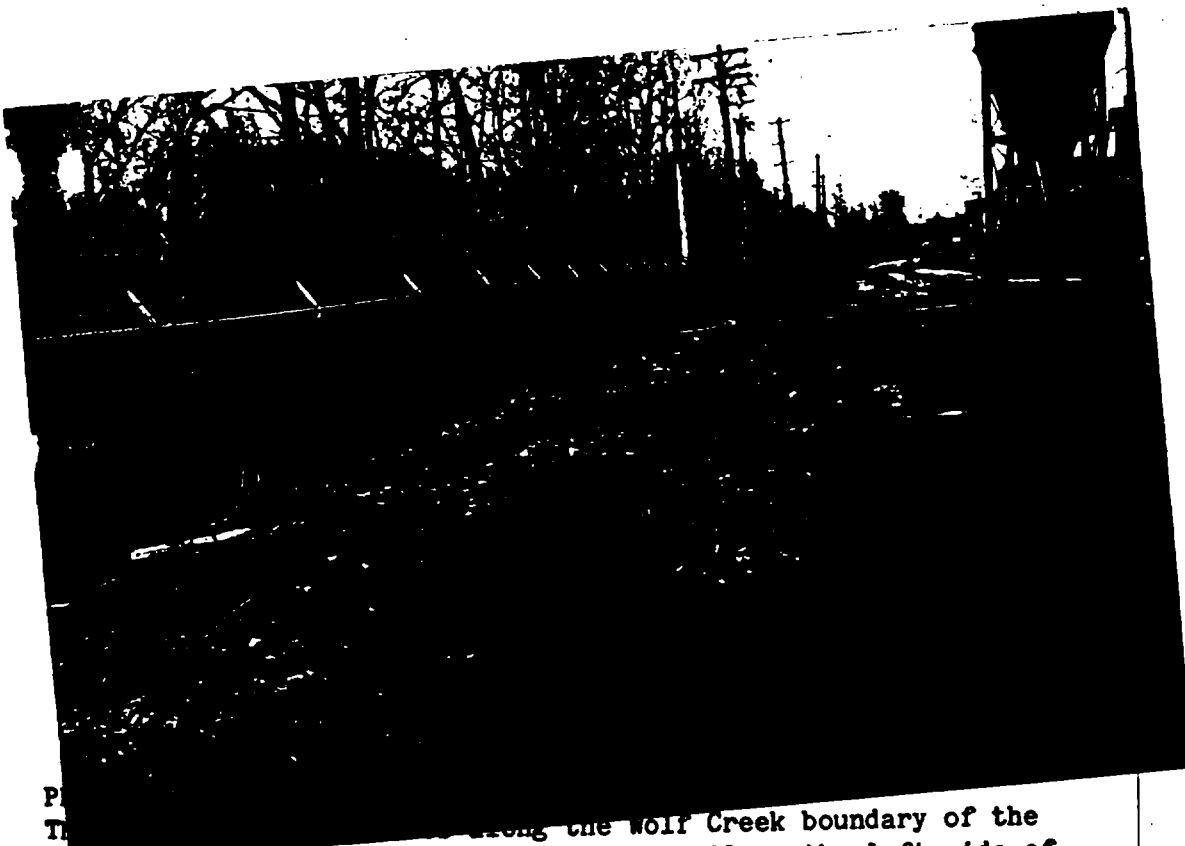


PHOTO 2: View along the Wolf Creek boundary of the
site; Wolf Creek is down a 15 feet high hill on the left side of
the photo. The pump house that is believed to be the source of
the PCB oil/water is in the right background.
(Photo by Scoville, 4/7/87, 1105 hrs.) *WHS*

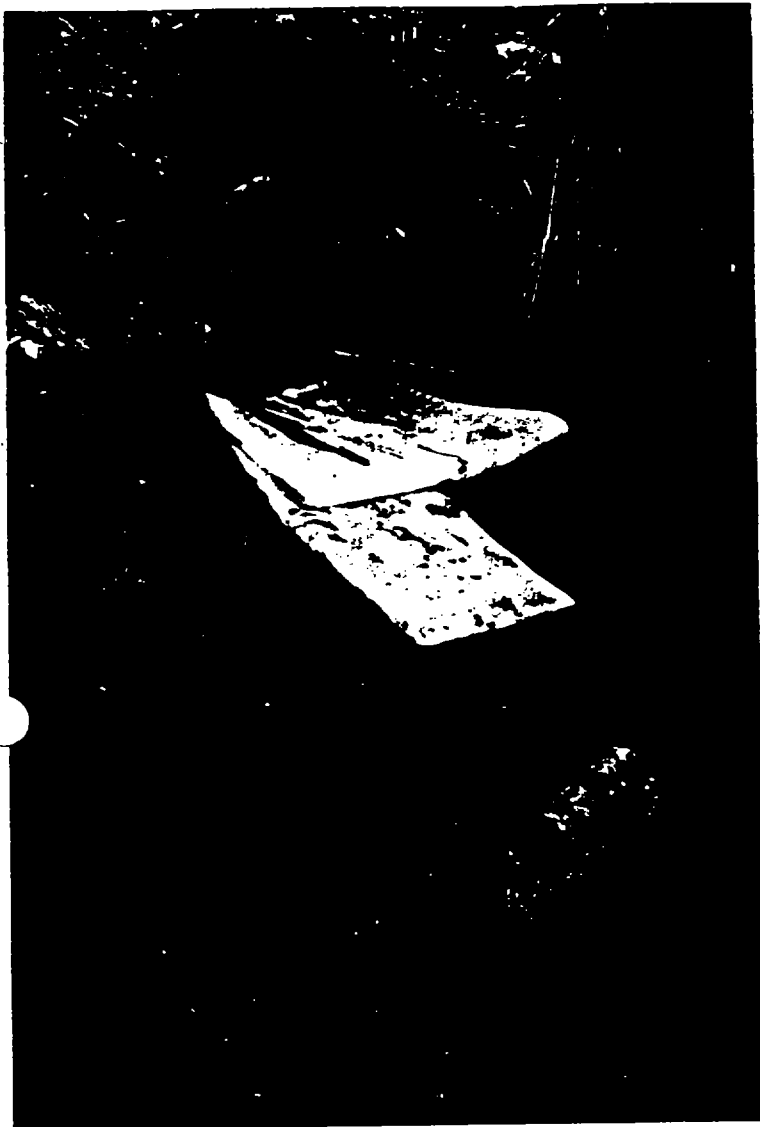


PHOTO 3: DAYTON TIRE AND RUBBER COMPANY, Dayton, OH. The discharge line from the pumphouse discharged into Wolf Creek at the side of the hill shown in Photo 2. Oil was collected with sorbent pads, and the discharge pipe was later sealed with concrete. (Photo by Scoville, 4/7/87, 1100 hrs.) *WHS*

PHOTO 4: DAYTON TIRE AND RUBBER COMPANY, Dayton, OH. Oil and water that was retained by the boom beneath the discharge pipe was skimmed and pumped into drums. Visibly contaminated soil was also drummed. (Photo by Scoville, 4/7/87, 0950 hrs.) *WHS*





PHOTO 5: DAYTON TIRE AND RUBBER COMPANY, Dayton, OH.
 Immediate actions by OEPA and U.S. EPA contractors concentrated
 on limiting the contamination spread by booming the creek. This
 boom was placed approximately 1.5 miles downstream of the site
 near the Great Miami River. (Photo by Scoville, 4/7/87, 0945
 hrs.) *WHS*

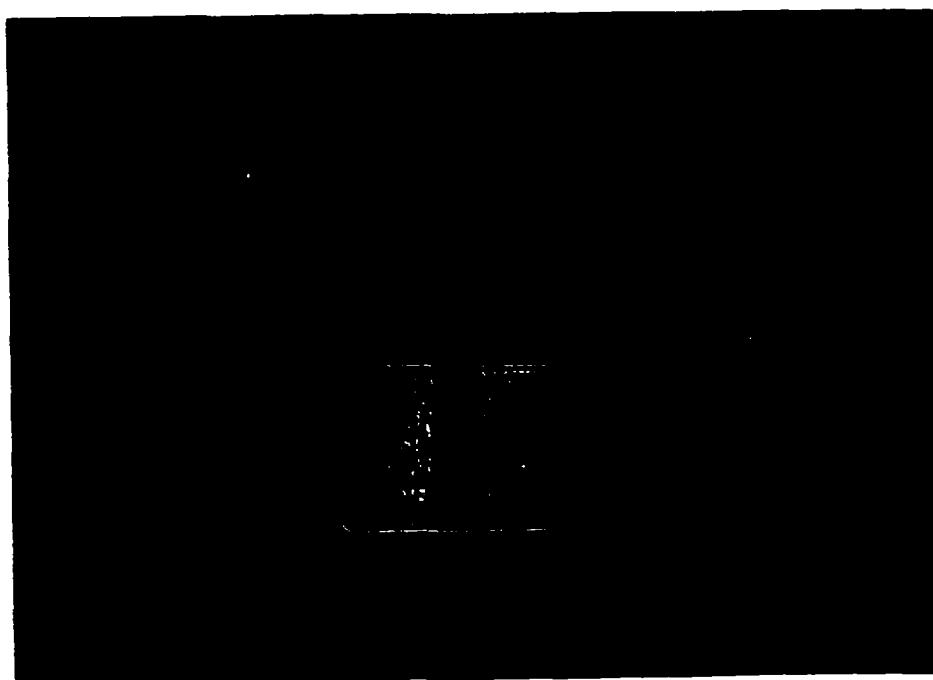


PHOTO 6: DAYTON TIRE AND RUBBER COMPANY, Dayton, OH.
 Warning signs were posted and caution tape was strung to warn of
 the PCB contamination in Wolf Creek and the Great Miami River. A
 fish advisory was also issued.

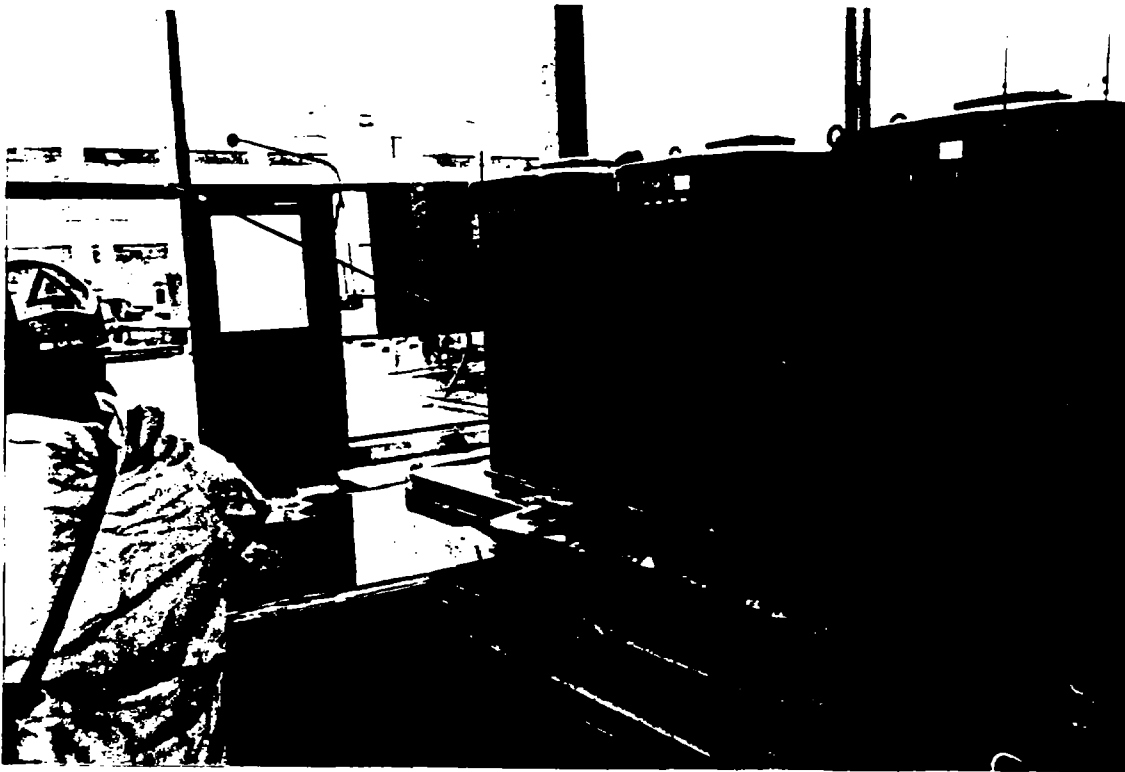


PHOTO 7: DAYTON TIRE AND RUBBER COMPANY, Dayton, OH.
Transformer Area A.

All of the oil in the four transformers remaining in this area
were pumped in to drums.

(Photo by Scoville, 4/7/87, 1615 hrs.) *WMS*



PHOTO 8: DAYTON TIRE AND RUBBER COMPANY, Dayton, OH.
Transformer Area A.

The center of the floor was open to the first floor of the
facility.

(Photo by Scoville, 4/7/87, 1615 hrs.) *WMS*



PHOTO 9: DAYTON TIRE AND RUBBER COMPANY, Dayton, OH.
Transformer Area B.
Distance view of the two transformers in this area.
(Photo by Scoville, 4/7/87, 1545 hrs.) *WMS*

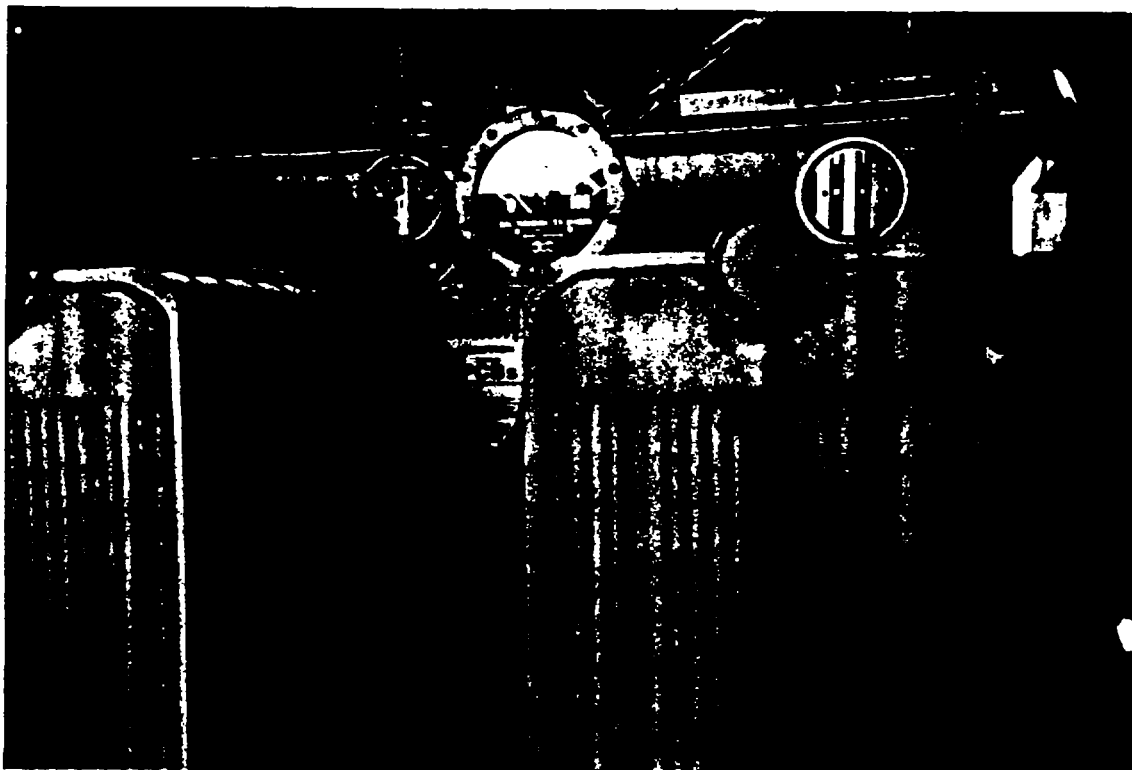


PHOTO 10: DAYTON TIRE AND RUBBER COMPANY, Dayton, OH.
Transformer Area B.
Close-up view of the PCB warning sticker on the transformer.
(Photo by Scoville, 4/7/87, 1545 hrs.) *WMS*

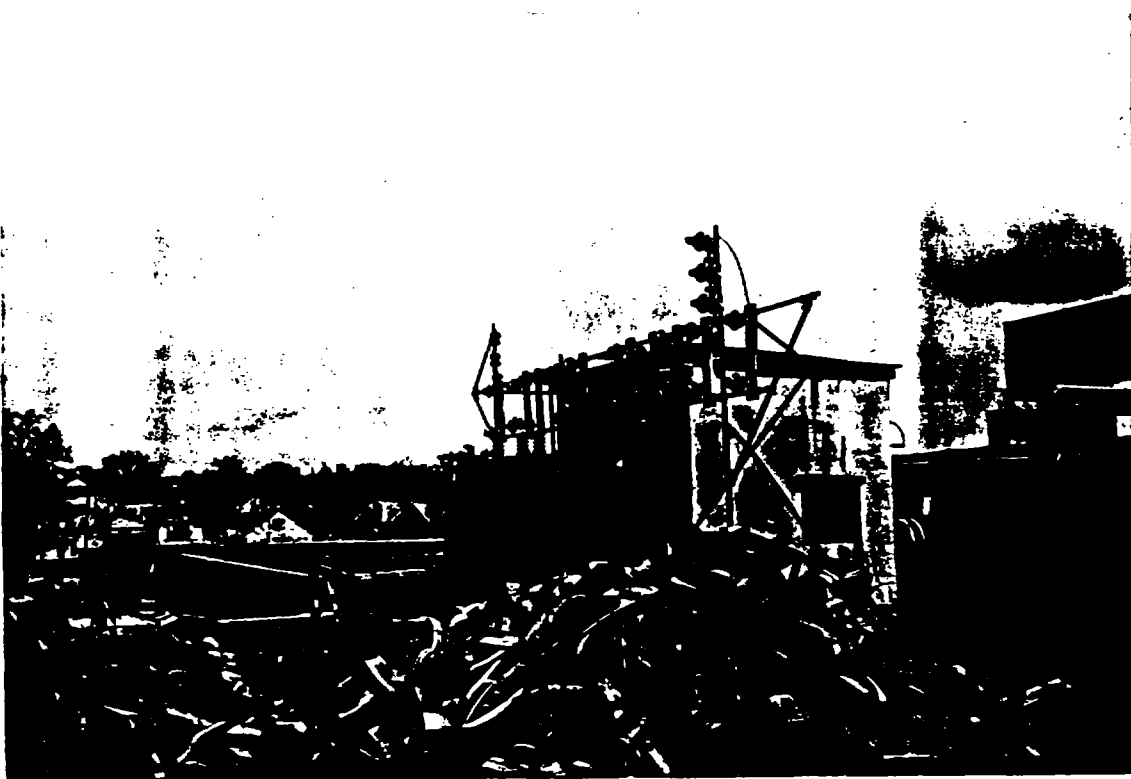


PHOTO 11: DAYTON TIRE AND RUBBER COMPANY, Dayton, OH.
Transformer Area C.

Three of the five transformers were found upright. The metal bands in the foreground from the transformers were later staged inside the building.

(Photo by Scoville, 4/7/87, 1515 hrs.) (LW)

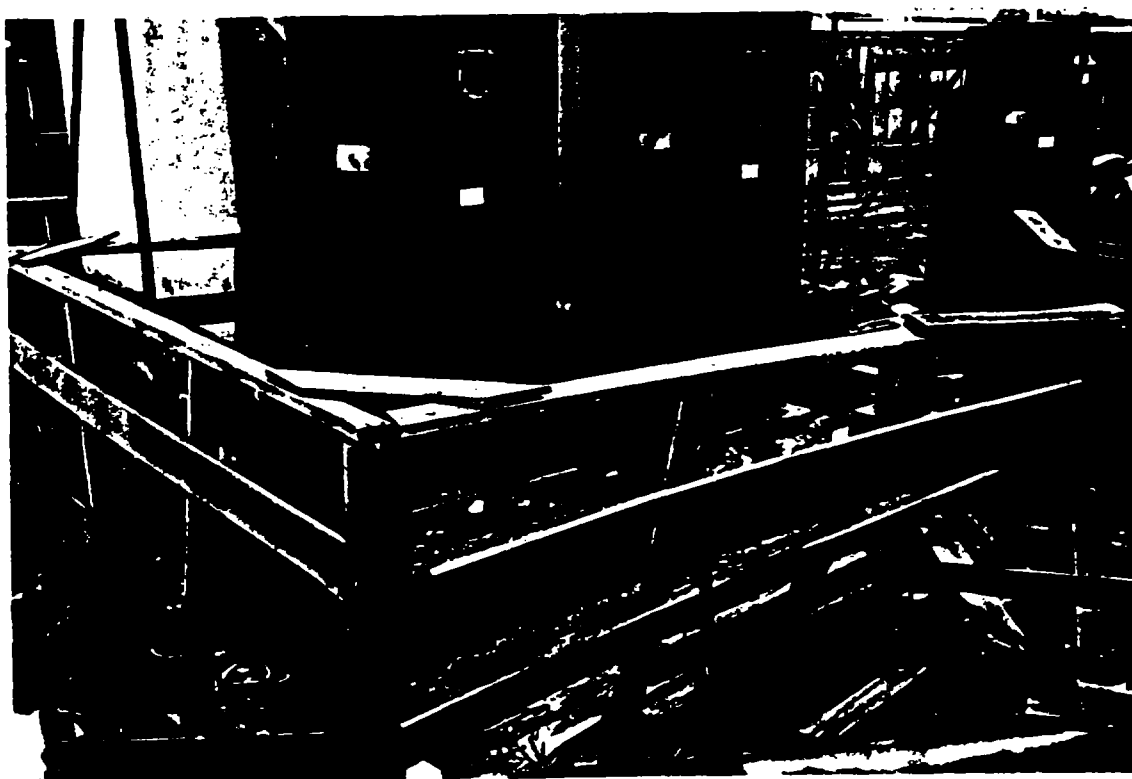


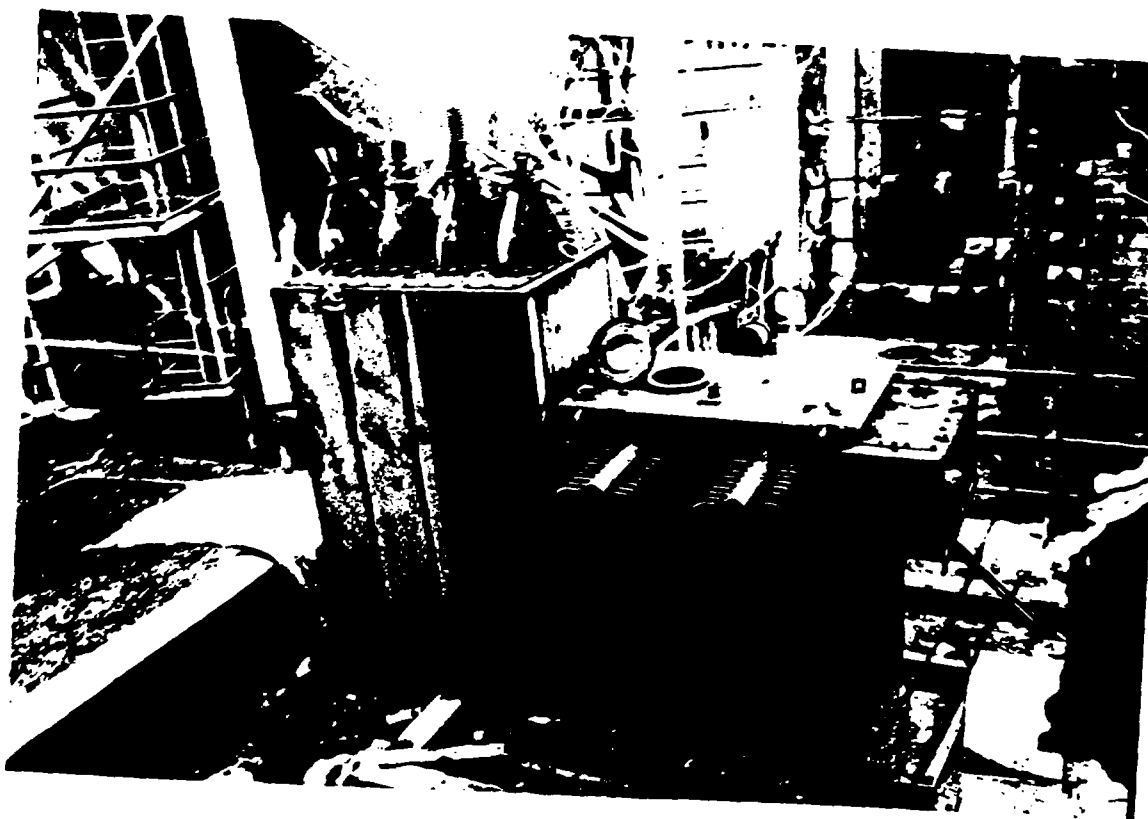
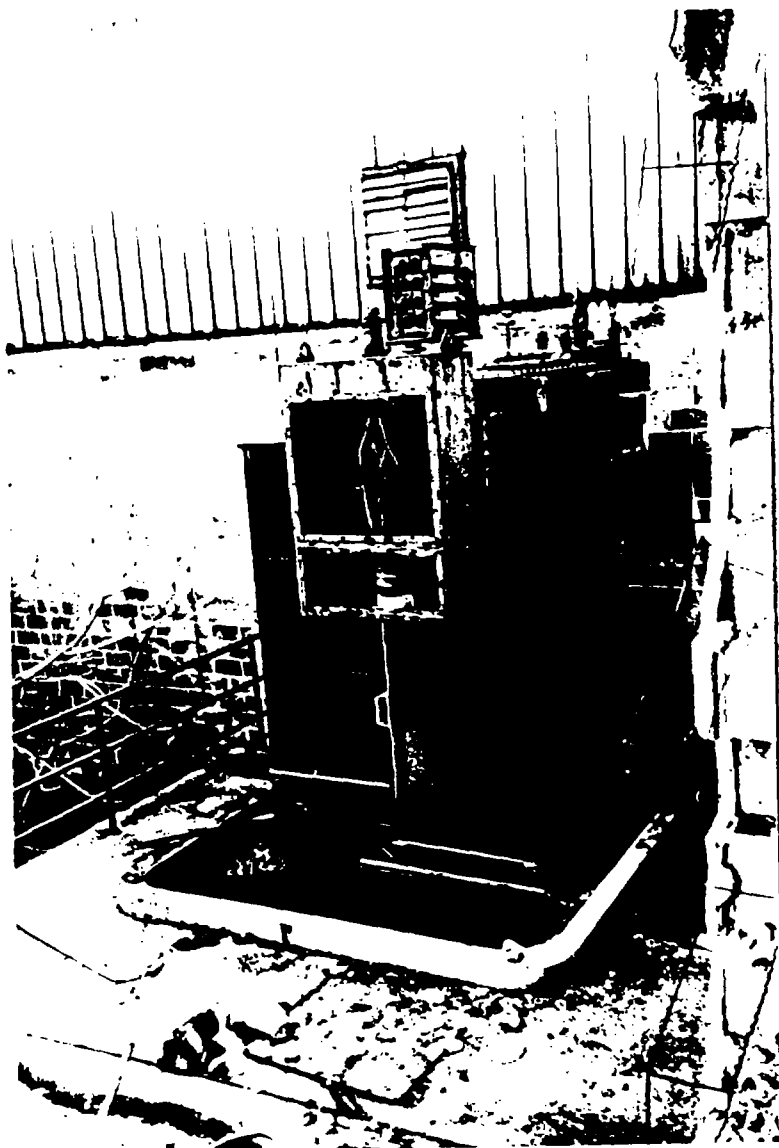
PHOTO 12: DAYTON TIRE AND RUBBER COMPANY, Dayton, OH.
Transformer Area C.

The small dike around the transformers had retained some of the PCB oil, but most had seeped through the roof and onto areas of the first floor and basement.

(Photo by Scoville, 4/7/87, 1515 hrs.) (LW)

PHOTO 13: DAYTON TIRE AND
RUBBER COMPANY, Dayton, OH.
Transformer Area D.
This transformer area was on
the roof near area E.
(Photo by Scoville, 4/7/87,
1730 hrs.) *WLB*

PHOTO 14: DAYTON TIRE AND
RUBBER COMPANY, Dayton, OH.
Transformer Area D.
These transformers were
covered with plastic to
prevent rain from entering the
transformers and spreading
more PCB oil.
(Photo by Scoville, 4/7/87,
1730 hrs.) *WLB*



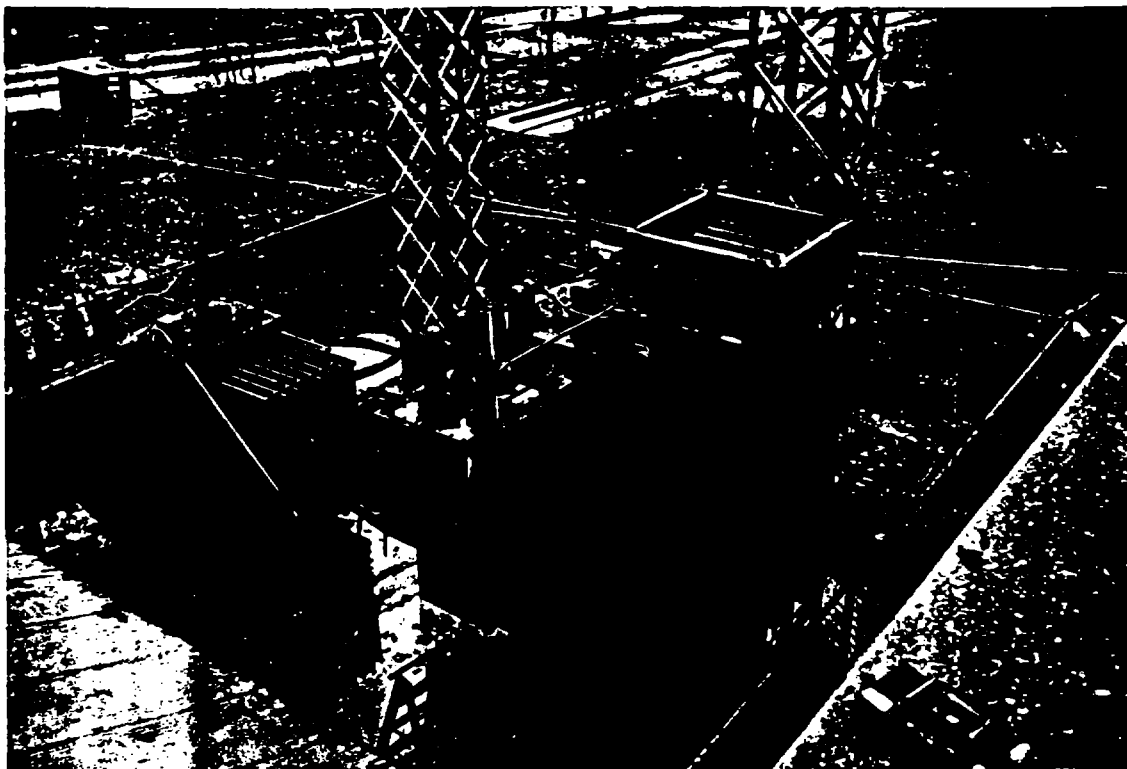


PHOTO 15: DAYTON TIRE AND RUBBER COMPANY, Dayton, OH.
Transformer Area E.

Oil from the transformers in this area was pumped because it was believed that this area was the source of the contamination.
(Photo by Scoville, 4/7/87, 1730 hrs.) *WHS*

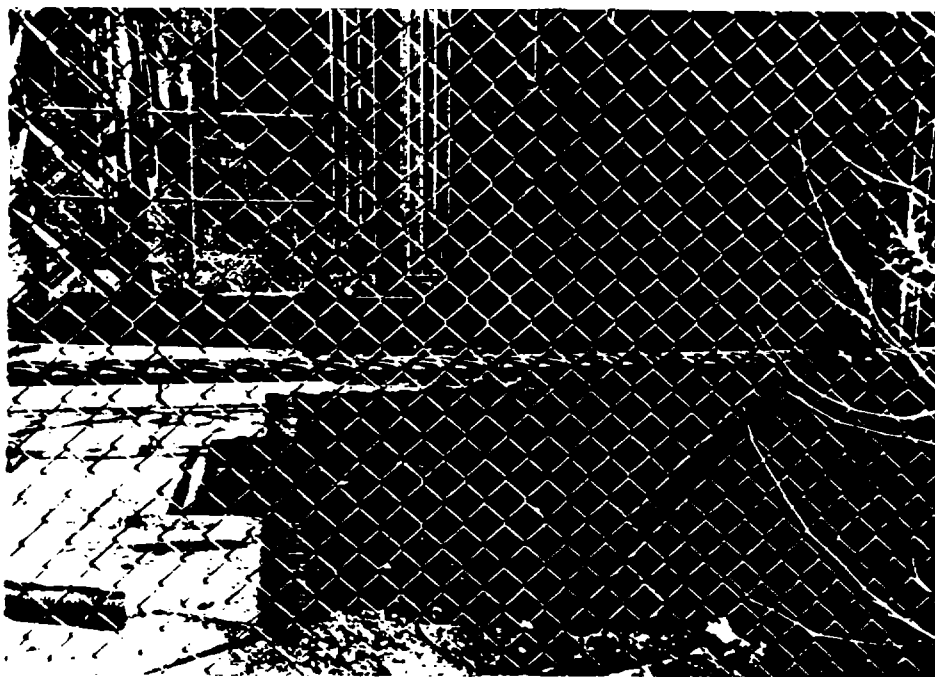


PHOTO 16: DAYTON TIRE AND RUBBER COMPANY, Dayton, OH.
Transformer Area E.

These transformers were also covered with visqueen during the initial response.
(Photo by Bowlus.)

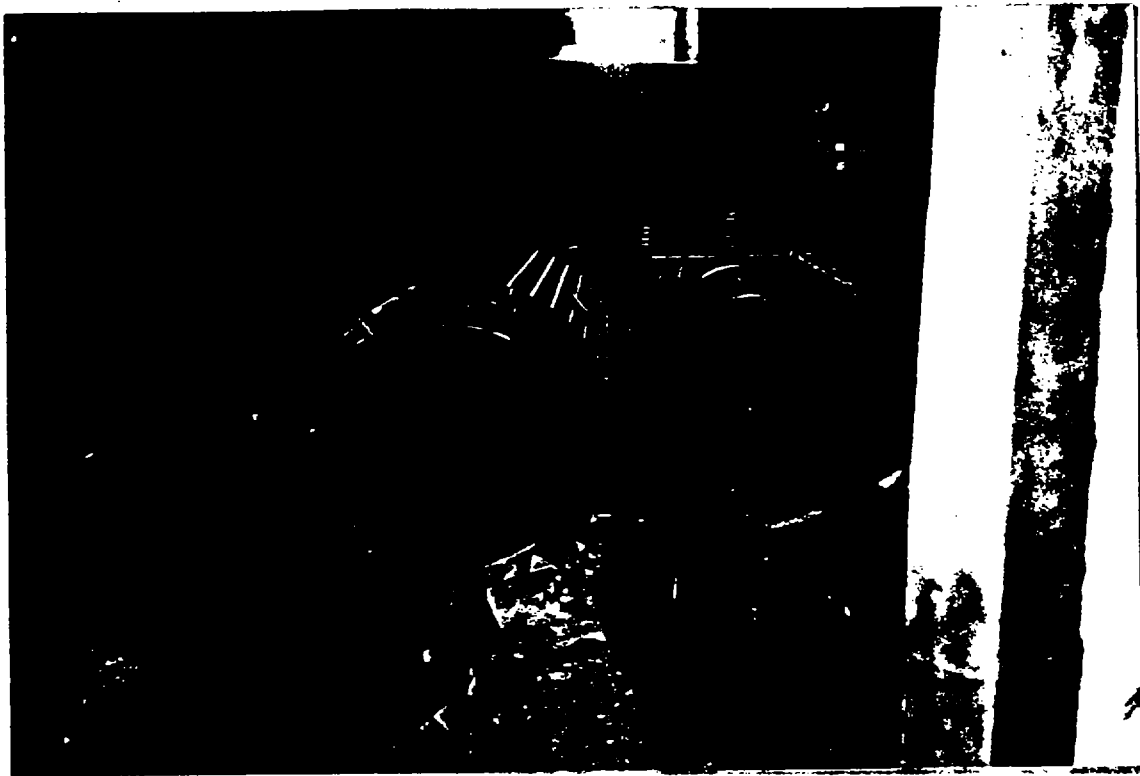


PHOTO 17: DAYTON TIRE AND RUBBER COMPANY, Dayton, OH.
Vault 1.
Three transformers remained in this vault area beneath the
medical building.
(Photo by Scoville, 4/7/87, 1635 hrs.) *LMJ*



PHOTO 18: DAYTON TIRE AND RUBBER COMPANY, Dayton, OH.
Vault 1.
Ash and roofing material near the transformers.
(Photo by Scoville, 4/7/87, 1635 hrs.) *LMJ*

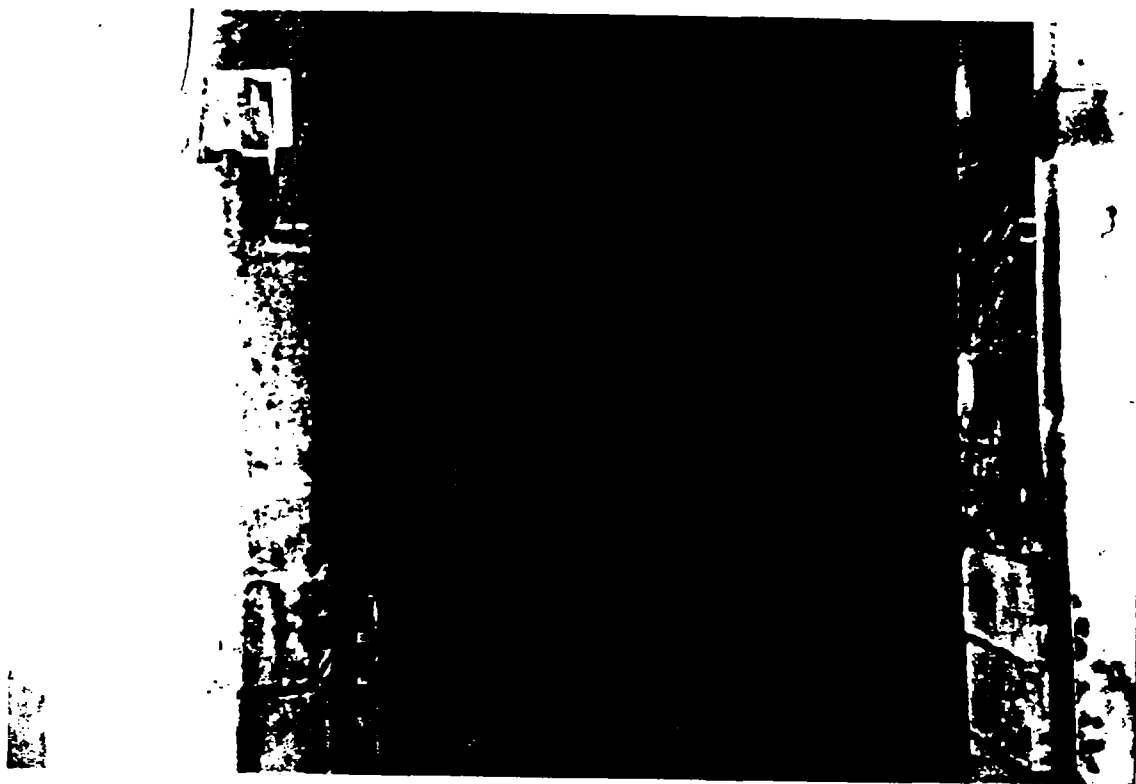


PHOTO 19: DAYTON TIRE AND RUBBER COMPANY, Dayton, OH.
Vault 2.
Four transformers were found in this vault area.
(Photo by Scoville, 4/7/87, 1545 hrs.) *WHS*

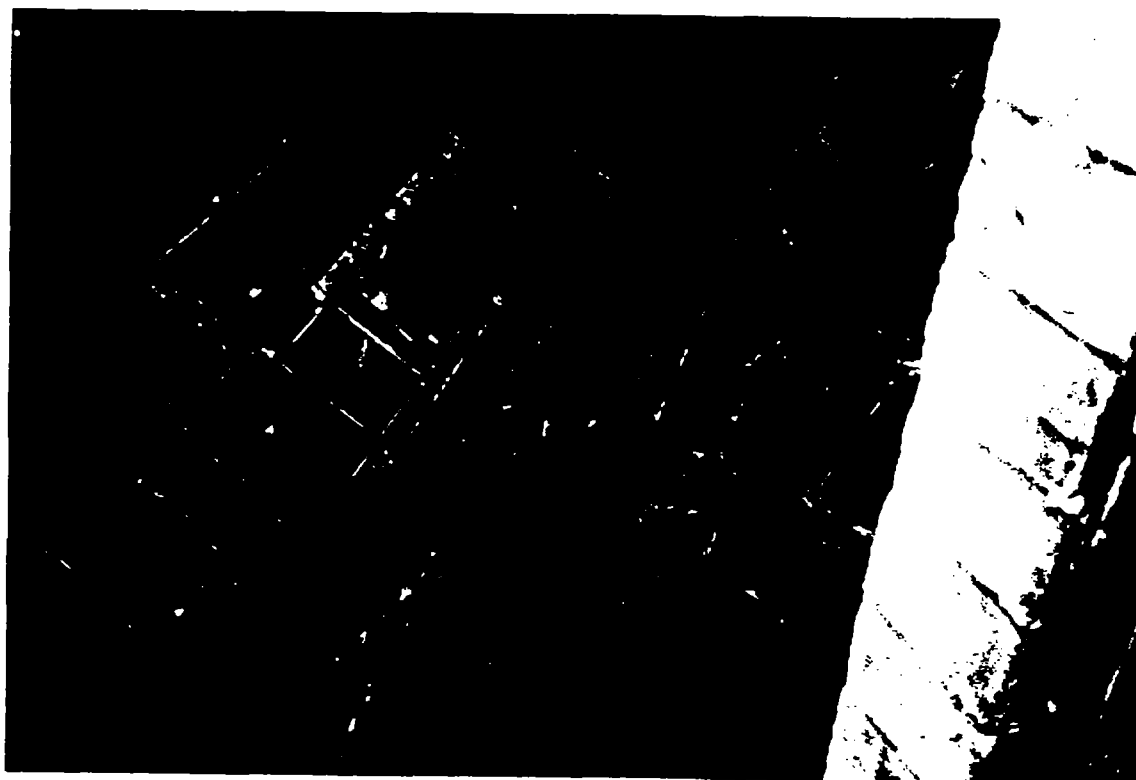


PHOTO 20: DAYTON TIRE AND RUBBER COMPANY, Dayton, OH.
Vault 2.
Metal bands and internal parts of a transformer. Note that no
copper remains.
(Photo by Scoville, 4/7/87, 1545 hrs.) *WHS*

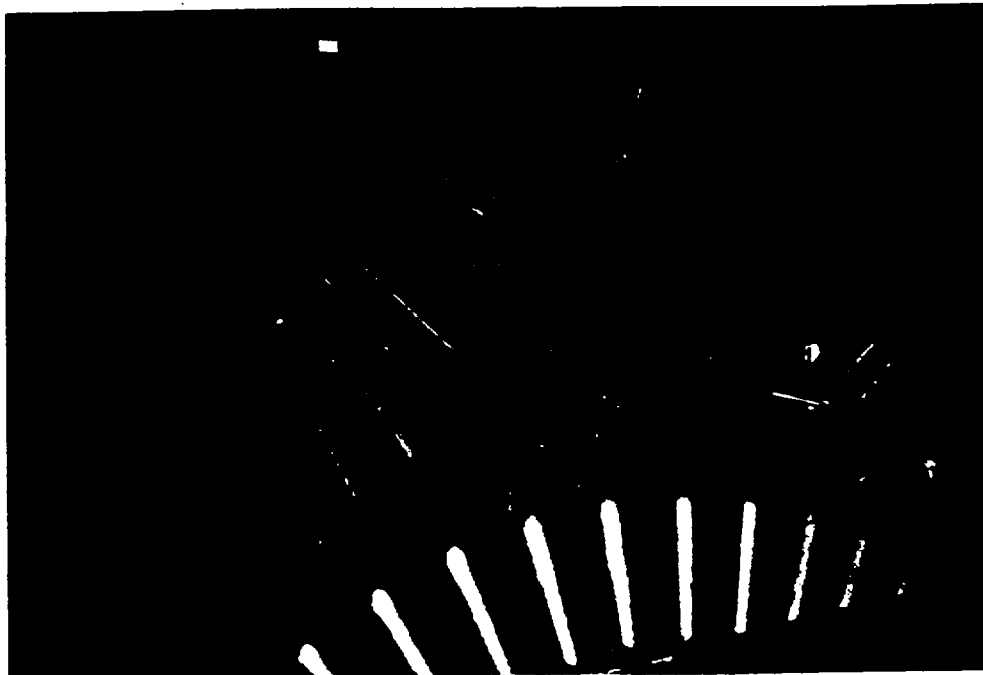


PHOTO 21: DAYTON TIRE AND RUBBER COMPANY, Dayton, OH.
Vault 2.

All of the transformers in this vault contained approximately 260 gallons of oil. The empty carcasses weigh about 1350 lb.
(Photo by Bowlus.)



PHOTO 22: DAYTON TIRE AND RUBBER COMPANY, Dayton, OH.
Vault 2.

These carcasses are similar in size to those found in Vaults 1 and 3, and three of Vault 4.
(Photo by Bowlus.)

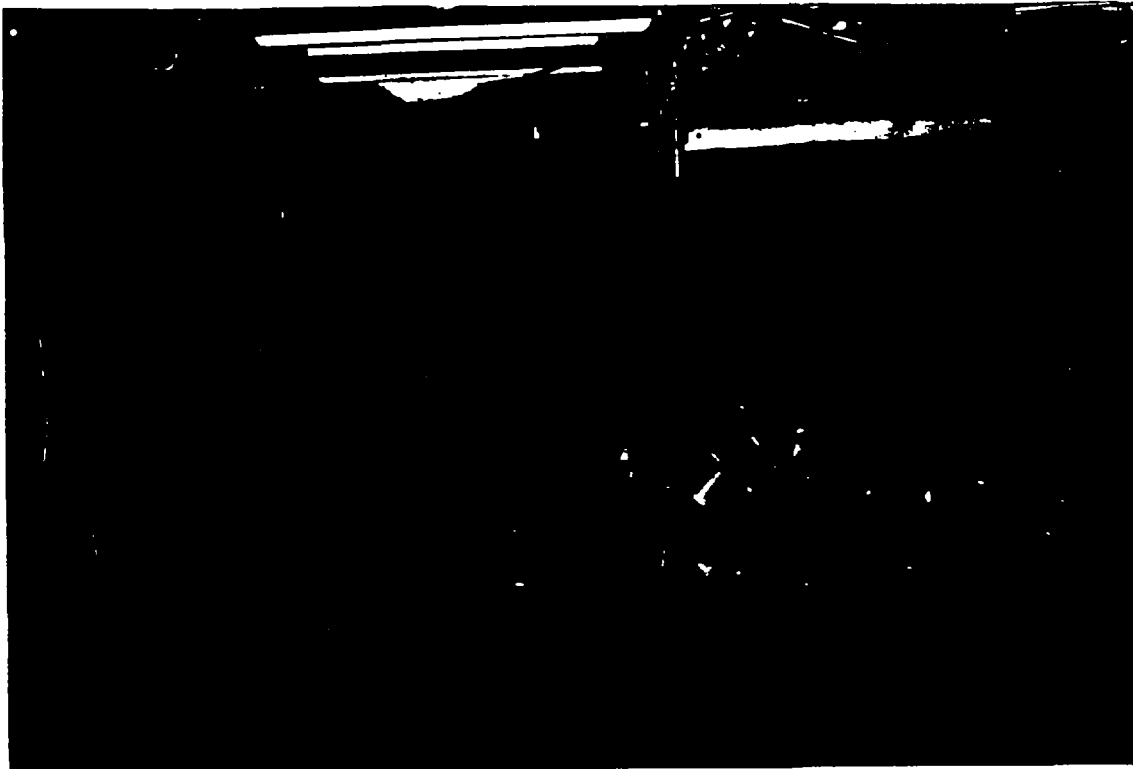


PHOTO 23: DAYTON TIRE AND RUBBER COMPANY, Dayton, OH.
Outside Vault 3.
Metal bands from the transformers.
(Photo by Scoville, 4/7/87, 1700 hrs.) *LSH*

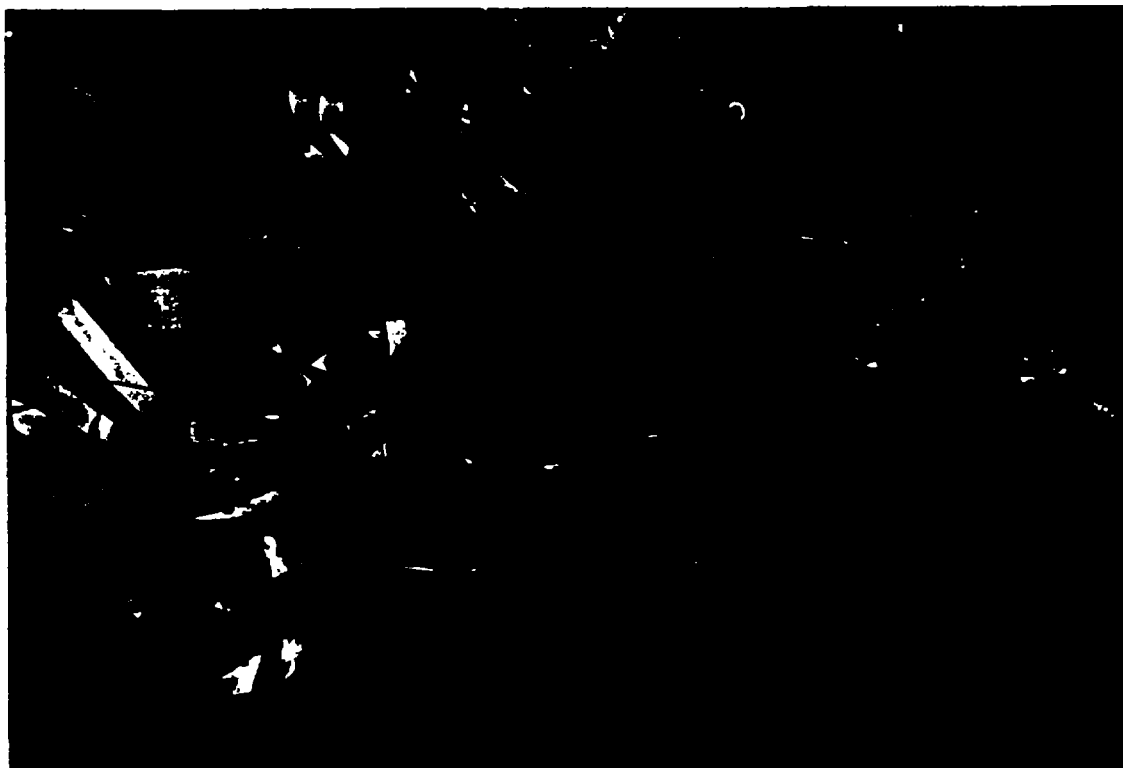


PHOTO 24: DAYTON TIRE AND RUBBER COMPANY, Dayton, OH.
Outside Vault 3.
Oil from the transformers in Vault 3 spilled and covered a large
area of the open room.
(Photo by Scoville, 4/7/87, 1700 hrs.) *LSH*

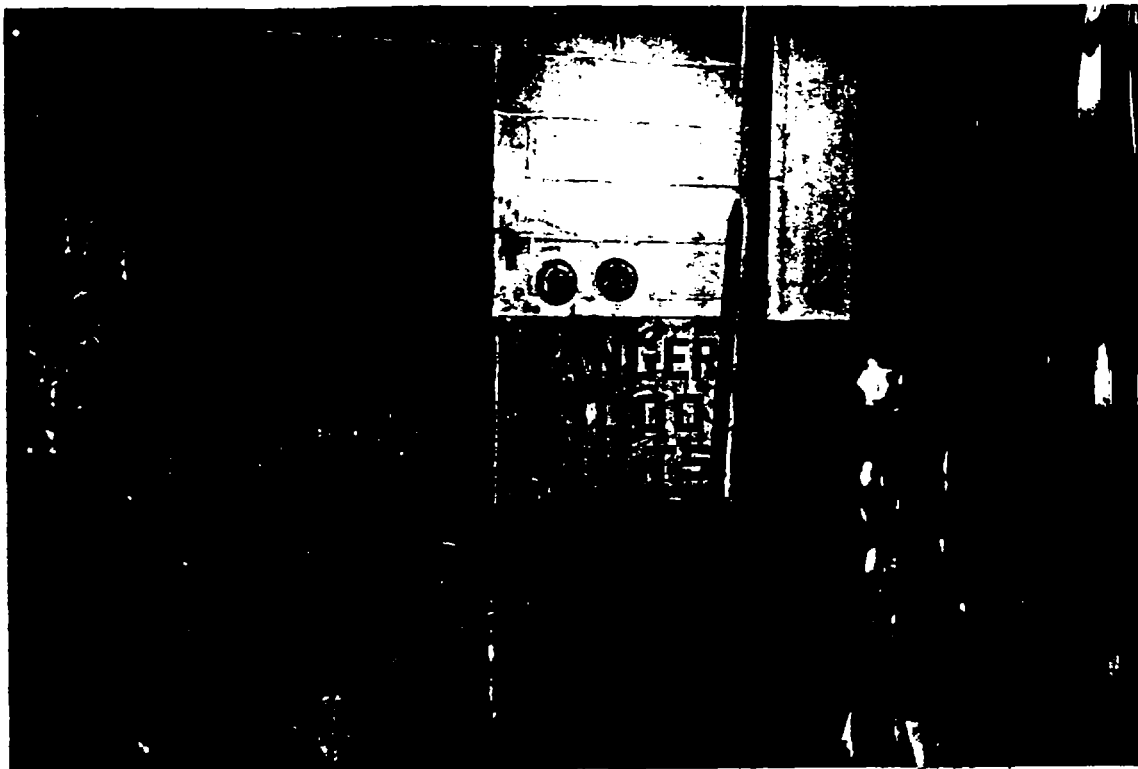


PHOTO 25: DAYTON TIRE AND RUBBER COMPANY, Dayton, OH.
Vault 3.

Four transformer carcasses remained in this vault.
(Photo by Scoville, 4/7/87, 1700 hrs.) *WBS*



PHOTO 26: DAYTON TIRE AND RUBBER COMPANY, Dayton, OH.
Vault 3.

Three of the transformers in this vault were of different design
from the transformers in Vault 2 but similar in size.
(Photo by Bowlus.)



PHOTO 27: DAYTON TIRE AND RUBBER COMPANY, Dayton, OH.
 Outside Boiler Room.
 A spare transformer was kept by the Dayton Tire Company outside
 of the Boiler Room.
 (Photo by Bowlus.)



PHOTO 28: DAYTON TIRE AND RUBBER COMPANY, Dayton, OH.
 Outside of Switch Room 2.
 This transformer was later staged in the out building with the
 drums of transformer oil.
 (Photo by Bowlus.)



PHOTO 29: DAYTON TIRE AND RUBBER COMPANY, Dayton, OH.
Switch Room 1.
The two switch rooms contained approximately 54 capacitors.
(Photo by Scoville, 4/7/87, 1230 hrs.) *WHS*



PHOTO 30: DAYTON TIRE AND RUBBER COMPANY, Dayton, OH.
Switch Room 1.
Oil from all the capacitors was removed and pumped into drums.
(Photo by Scoville, 4/7/87, 1230 hrs.) *WHS*

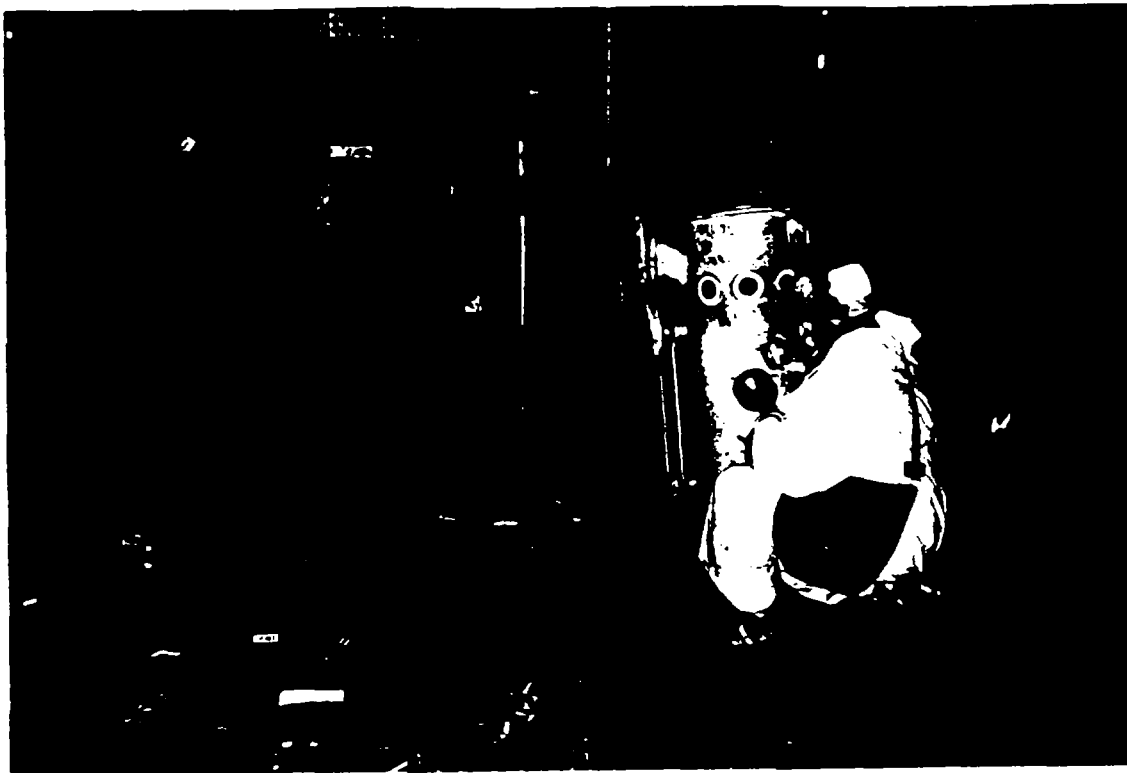


PHOTO 31: DAYTON TIRE AND RUBBER COMPANY, Dayton, OH.
 Outside Switch Room 2.
 OSC Bowlus inspecting the transformer shown in Photo 28. Dioxins
 are suspected to be present in this room.
 (Photo by Scoville, 4/7/87, 1235 hrs.) *WHS*

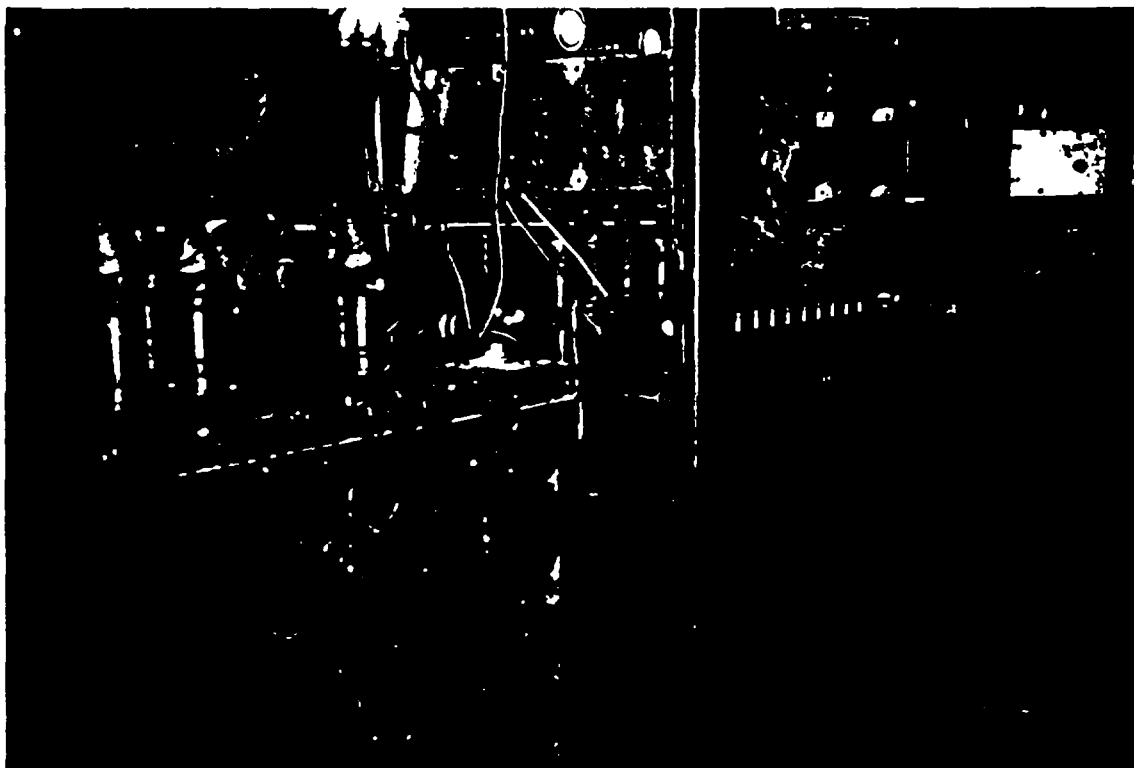


PHOTO 32: DAYTON TIRE AND RUBBER COMPANY, Dayton, OH.
 Switch Room 2.
 Capacitors still mounted in the switch boxes.
 (Photo by Scoville, 4/7/87, 1300 hrs.) *WHS*

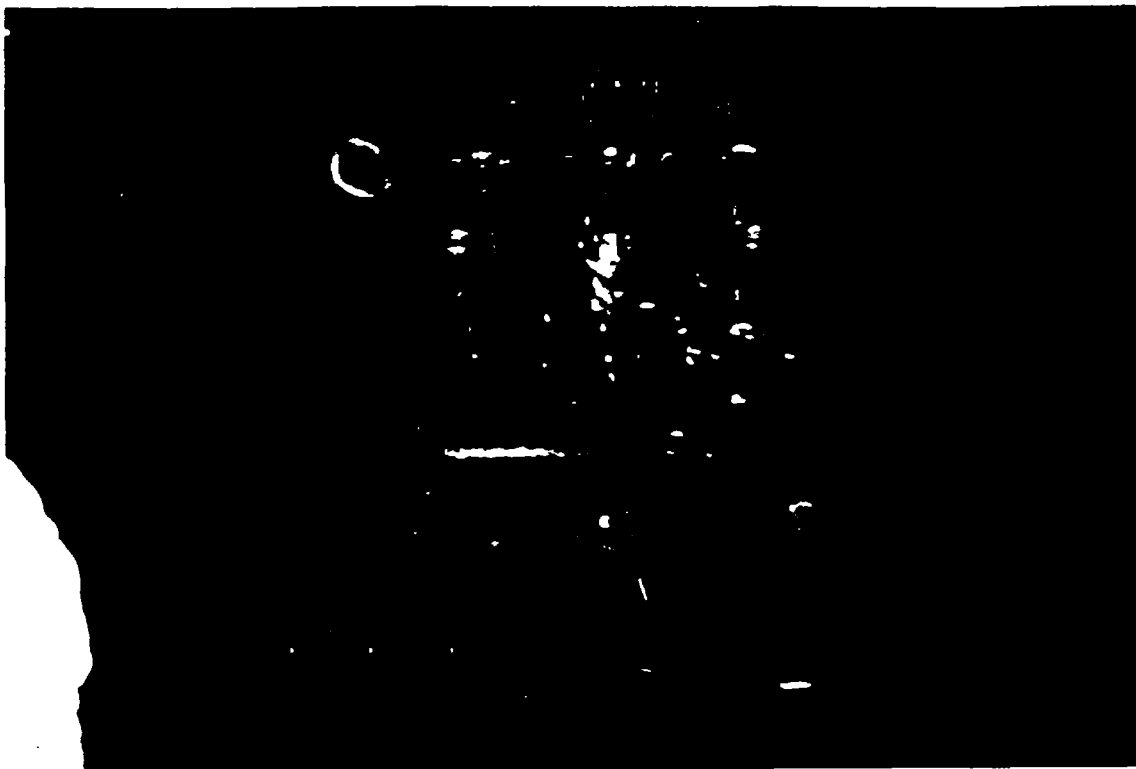


PHOTO 33: DAYTON TIRE AND RUBBER COMPANY, Dayton, OH.
Switch Room 2.
An open capacitor.
(Photo by Scoville, 4/7/87, 1300 hrs.) *WHS*

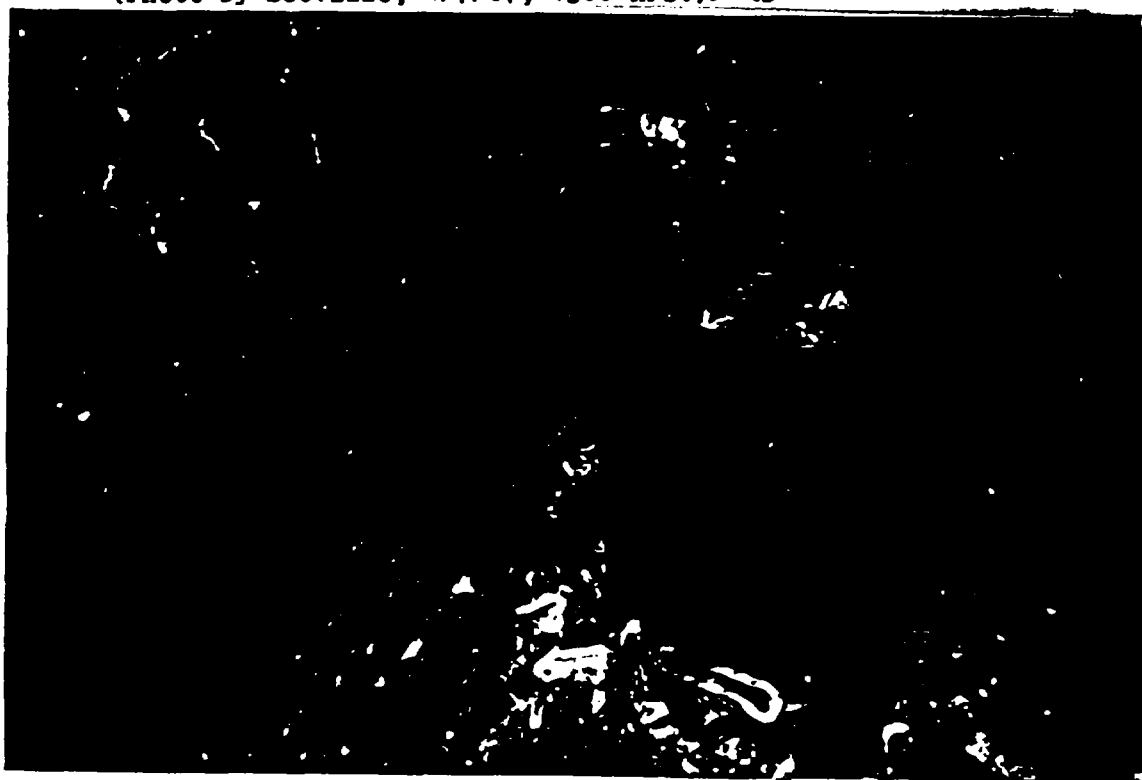


PHOTO 34: DAYTON TIRE AND RUBBER COMPANY, Dayton, OH.
Basement near the locker room.
A lone capacitor was found dismantled.
(Photo by Scoville, 4/7/87, 1720 hrs.) *WHS*



PHOTO 35: DAYTON TIRE AND RUBBER COMPANY, Dayton, OH.
 Battery Storage Area.
 Batteries for operating small transport vehicles were charged and
 stored in this area.
 (Photo by Scoville, 4/7/87, 1215 hrs.) *UNJ*

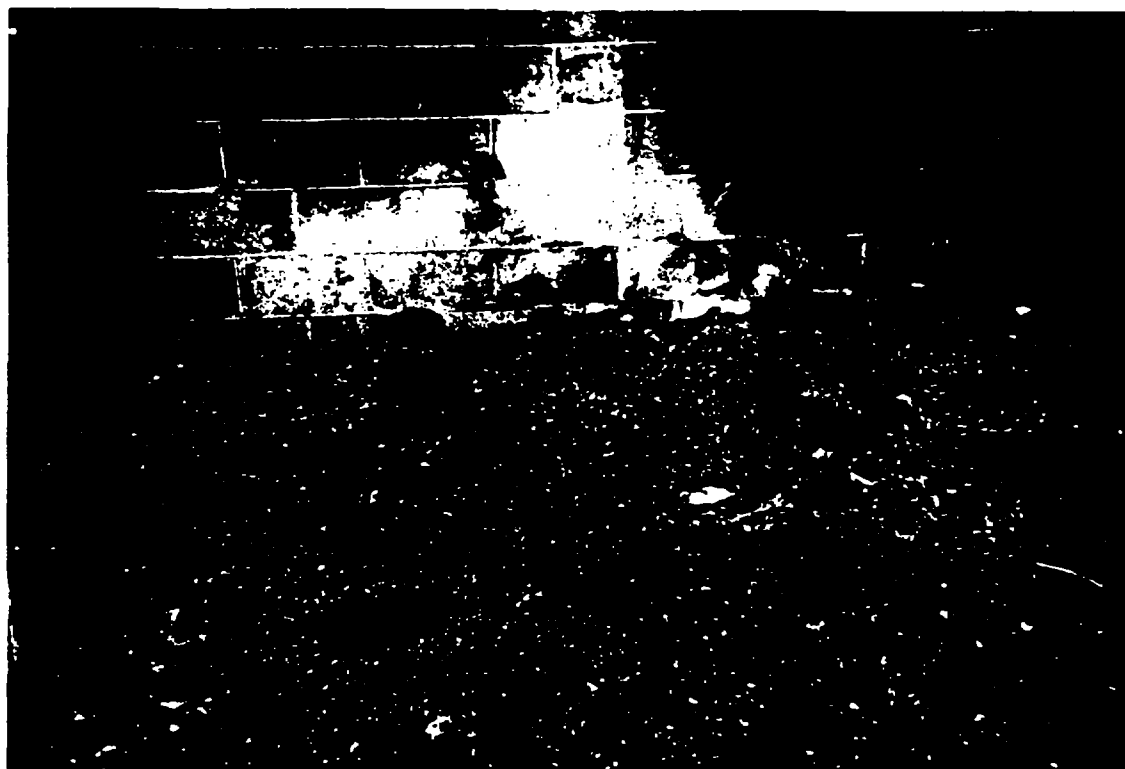


PHOTO 36: DAYTON TIRE AND RUBBER COMPANY, Dayton, OH.
 Battery Storage Area.
 The ash in the cinder block area shown in Photo 35 was composited
 with three other ash areas for dioxin analyses. Preliminary
 results indicate that dioxins may be present in several of the
 transformer vaults and switch rooms.
 (Photo by Scoville, 4/7/87, 1215 hrs.) *UNJ*

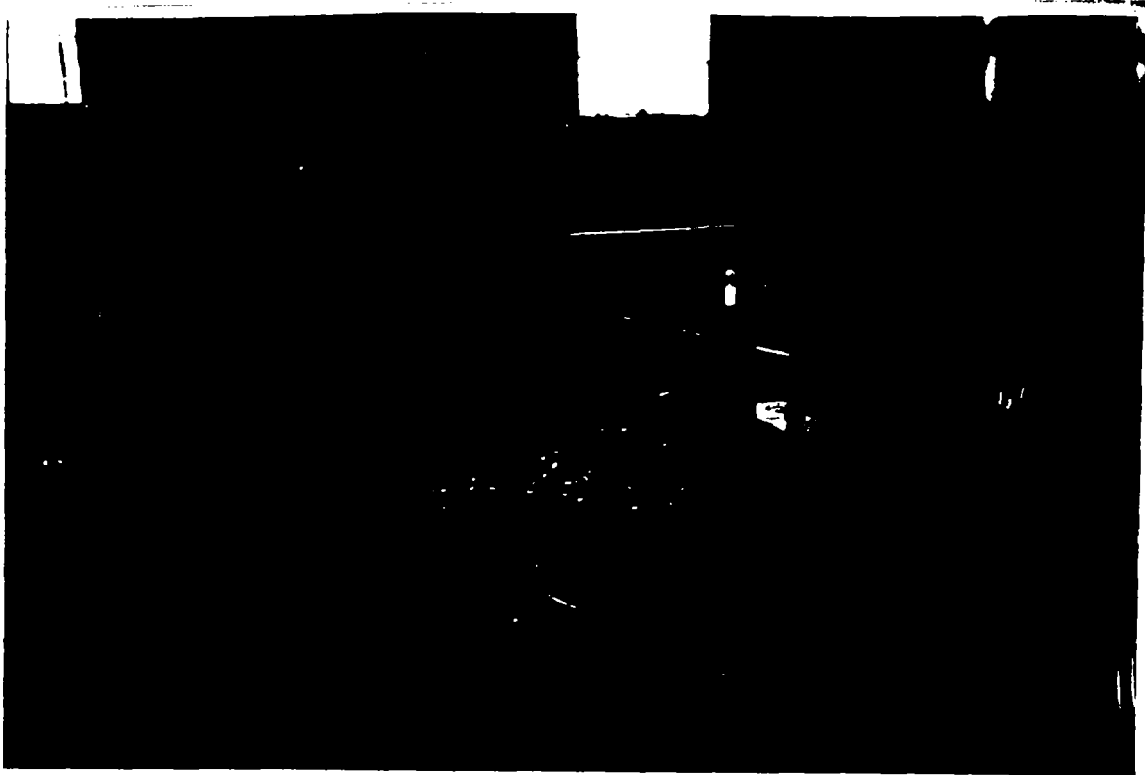


PHOTO 37: DAYTON TIRE AND RUBBER COMPANY, Dayton, OH.
 Railroad Tanker Room.
 Three buried railroad cars contained an unknown quantity of waste
 oils.
 (Photo by Scoville, 4/7/87, 1220 hrs.) *WHS*



PHOTO 38: DAYTON TIRE AND RUBBER COMPANY, Dayton, OH.
 Railroad Tanker Room.
 No PCBs were found in a composite sample of the three tankers.
 The oils are very viscous.
 (Photo by Scoville, 4/7/87, 1220 hrs.) *WHS*



PHOTO 39: DAYTON TIRE AND RUBBER COMPANY, Dayton, OH.
 Interior near Decon-reduction area.
 Large puddles of water were found on the first floor and the
 basement.
 (Photo by Scoville, 4/7/87, 1210 hrs.) *WBY*

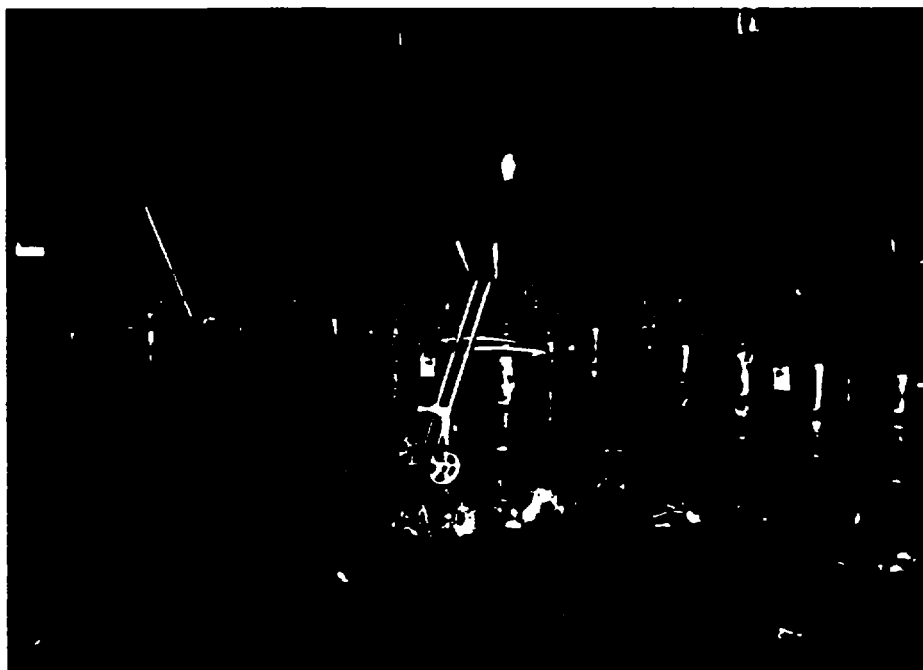


PHOTO 40: DAYTON TIRE AND RUBBER COMPANY, Dayton, OH.
 Drum Staging Area.
 Drums of oil from the transformers and capacitors were staged
 along with drums of oil/water from the initial actions along the
 creek.
 (Photo by Bowlus.)